



**SPECIAL STUDY
ON
ENVIRONMENTAL IMPLICATIONS OF
LNG AND COAL TERMINALS AT
PORT QASIM AUTHORITY,
FOR THE PERIOD 2015-19**

AUDITOR GENERAL OF PAKISTAN

PREFACE

The Auditor General of Pakistan conducts audit under Articles 169 and 170 of the Constitution of the Islamic Republic of Pakistan, 1973, read with Sections 8 and 12 of the Auditor General's (Functions, Powers and Terms and Conditions of Service) Ordinance, 2001. The Special Study of Environmental Implications of LNG and Coal Terminals at Port Qasim Authority (PQA), Karachi was carried out accordingly.

The Directorate General of Commercial Audit and Evaluation (South), Karachi conducted Special Study on Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the period 2015 to 2019 during March to April, 2020 with a view to report significant findings to stakeholders. Audit examined the mitigation and effectiveness aspects of measures for Environmental Implications of LNG and Coal Terminals at PQA, Karachi. In addition, audit also assessed, on test check basis, whether the management complied with applicable laws, rules, and regulations in managing the environment at PQA, Karachi. The Special Study indicates specific actions that, if taken, will help the management to keep the environmental impacts of these projects in port vicinity within the permissible limits. Despite requests and subsequent reminders, DAC meeting was not convened by the PAO.

The Special Study Report is submitted to the President of Pakistan in pursuance of Article 171 of the Constitution of the Islamic Republic of Pakistan, 1973, for causing it to be laid before the Parliament.

Islamabad
Dated:

(Muhammad Ajmal Gondal)
Auditor-General of Pakistan

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ABBREVIATIONS AND ACRONYMS

BOD	Biochemical Oxygen Demand
BOT	Built, Operate and Transfer
CEMS	Continuous Emission Monitoring System
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
EETPL	Engro Elengy Terminal (Pvt.) Limited
EIA	Environmental Impact Assessment
EMA	Environmental Management Plan
EMP	Environmental Monitoring Plan
ESIA	Environmental & Social Impact Assessment
FOTCO	Fauji Oil Terminal and Distribution Company
FSRU	Floating, Storage Re-gasification Unit
GEMS	Global Environmental Management Services
GHGs	Green House Gases
HFP&S	Haueng Fuyun Port & Shipping
IA	Implementation Agreement
IEE	Initial Environmental Examination
IEMC	Independent Environmental Monitoring Consultant
LCA	Life Cycle Assessment
L.D.	Liquidity Damage
LNG	Liquefied Natural Gas
MW	Mega Watt
NO	Nitrogen Monoxide
NEQS	National Environmental Quality Standards
PEPA	Pakistan Environmental Protection Act
PGPCL	Pakistan Gas Port Consortium Limited
PIBT	Pakistan International Bulk Terminal
PM	Particulate Matter
PQEPCL	Port Qasim Energy Power Company Limited
PQA	Port Qasim Authority
SEPA	Sindh Environment Protection Agency
SEQS	Sindh Environmental Quality Standards
SO ₂	Sulphur Dioxide
SSGCL	Sui Southern Gas Company Limited
TDS	Total Dissolve Solid
TSS	Total Suspended Solid

CPEC
IMC

China-Pak Economic Corridor
Independent Monitoring Consultant

EXECUTIVE SUMMARY

The Directorate General of Commercial Audit & Evaluation (South), Karachi conducted special study on Environmental Implications of LNG and Coal Terminals at Port Muhammad Bin Qasim, Karachi for the years 2015-16 to 2018-19. The main objective of the special study was to ascertain whether the Terminal Operators / Port comply with Pakistan Environmental Protection Act, 1997 and Sindh Environment Protection Agency Act, 2014 and to ascertain whether the Terminal Operators comply with the recommendations as mentioned in Environment & Social Impact Assessment to mitigate adverse impacts on environment during the construction and operation of the LNG and Coal, Cement / Clinker Terminals.

Key audit findings

On the basis of special study, following violations of Pakistan Environmental Protection Act, 1997 and Sindh Environment Protection Agency Act, 2014 and other International Rules/Procedures were pointed out:

- i. Storage of coal under the open sky,
- ii. Open conveyor belt for coal transportation,
- iii. Excess emissions of Sulphur Dioxide,
- iv. Existence of Cadmium in sea water,
- v. Non-calibration of Continuous Emission Monitoring System (CEMS),
- vi. Non-setting of criteria of Carbon dioxide (CO₂) emission, and
- vii. Non-development of PQA Environmental Policy.

Recommendations

- i. SEPA should revise the PM_{2.5} quality standard of ambient air in accordance with NEQS.
- ii. PEPA/SEPA should develop/standard of carbon dioxide (CO₂) emission in accordance with international standards to avoid the emission of harmful gases in the vicinity of PQA.
- iii. Operators should cover the coal yard area to avoid the coal dust emission in port vicinity.
- iv. Operators should use tabulated (covered)/conveyer belt like the one used for clinker.
- v. PIBT management should develop a buffer of trees with two rows throughout boundary of PIBT along with the link road.

- vi. PQA management should make the environment and safety department more effective, bringing it in line with international standards by inducting qualified/ professional staff in the department.

1. INTRODUCTION

Port Qasim Authority (PQA) was established through an Act of Parliament on June 29, 1973. It is the 2nd deep sea industrial-cum-commercial port operating under landlord concept. The Port is under the administrative control of Ministry of Maritime Affairs, Government of Pakistan. Chairman is the chief executive of the port. PQA is primarily a service oriented organization. The port provides shore based facilities and services to international shipping lines and other concerned agencies in the form of adequate water depth in the channel, berths/ terminals, cargo handling equipment, godowns, storage areas and providing facilities for safe day and night transit of vessels. Port has a Master Plan and Land Management Policy.

Establishment of LNG Terminal:

1st LNG Terminal

The Federal Cabinet approved Liquefied Natural Gas (LNG) Fast Track Project. PQA and M/s Engro Elengy Terminal (Private) Limited (EETPL) signed an Implementation Agreement (IA) on June 23, 2014. The project was commissioned in March 2015. The terminal is called Floating Storage Re-gasification Unit (FSRU). The LNG from export terminals is transported through LNG carrier. LNG is transferred from LNG carrier into moored FSRU. M/s EETPL got a No Objection Certificate (NOC) on March 20, 2014 from Sindh Environmental Protection Agency (SEPA).

2nd LNG Terminal

M/s. Pakistan Gasport Consortium Limited (PGPCL) signed / executed LNG Operation and Service Agreement on July 01, 2016. LNG Import Terminal is located at Hafeez Island, Chara Chan Waddio Creek at Mazhar Point in Port Qasim. The project comprised of a permanently moored FSRU and supporting jetty infrastructure to accept LNG delivery vessels to offload LNG supplies. PGPCL got a No Objection Certificate (NOC) on June 07, 2013 from Sindh Environmental Protection Agency (SEPA).

Establishment of Coal and Clinker / Cement Terminal:

Pakistan International Bulk Terminal (PIBT)

Pakistan International Bulk Terminal (PIBT) is the first bulk cargo terminal to handle Coal and Clinker / Cement on Build, Operate & Transfer (BOT) basis. Project

is operational since April, 2017 with a design capacity of 12 million tons per annum. Coal vessels are bringing 600,000 to 700,000 tons per month to PIBT.

Port Qasim Energy Power Company Limited (PQEPCL)

Government of Pakistan has approved the project. PQA and M/s. Port Qasim Energy Power Company Limited (PQEPCL) signed an agreement on April 23, 2015 for the establishment of 1320 MW Coal fire Power Project on 200 acres of land with a dedicated Jetty and 100 acre for ash storage yard. The project is of national significance under China-Pak Economic Corridor (CPEC) to meet energy requirement of the country.

Dedicated Coal Terminal by converting existing Marginal Wharf Berth:

PQA signed an Implementation Agreement (IA) on October 10, 2016 with M/s. Huneng Fuyun Ports & Shipping, China with an object to dedicate coal terminal by converting existing marginal wharf berth No. 3 &4. This project is dedicated to supply coal for 1320 MW Sahiwal Power Plant. The company is handling coal vessels from May 2017.

2. AUDIT OBJECTIVES

2.1 The major objectives of the audit were to:

- i. Ascertain as to whether the terminal operators / port comply with the requirements of Pakistan Environmental Protection Act, 1997 and Sindh Environment Protection Agency Act, 2014.
- ii. Examine whether the terminal operators comply with the recommendations of Environment Impact Assessment to mitigate adverse impacts on environment during the construction and operation of the LNG and coal, cement / clinker terminals.
- iii. Ascertain the precautionary measures to protect natural habitat i.e. re-plantation of mangrove forests, conservation of marine life during establishment of terminals and laying of gas pipelines.
- iv. Examine the impact of the entire activity on human lives i.e. coal workers, work environment, respiratory infections and other negative impact on nearby populations.

3. AUDIT SCOPE AND METHODOLOGY

3.1 Audit Scope

- 3.1.1 The special study of PQA was carried out with a view to examine the environmental implications of LNG and Coal terminals, Karachi.
- 3.1.2 Due to Covid-19 situation, the provision of record from terminal operators/ PQA remained limited/slow.

3.2 Audit Methodology

- a. Discussion / Meetings with officers/officials of PQA/terminal operators for clarification of information/record.
- b. Examination of Environmental Acts, Pakistan Environmental Protection Act (PEAA) and Sindh Environmental Protection Agency (SEPA).
- c. Examination of Environmental Impact Assessment (EIA) reports.
- d. Examination of effectiveness of Environmental Management Plan
- e. Review of internal control mechanism, steps taken to save environment in port area

4. AUDIT FINDINGS AND RECOMMENDATIONS

4.1 Organization and Management

4.1.1 Non-taking of mitigation measures as recommended in traffic impact assessment report

According to recommendation clause 4.2.2 of traffic impact assessment report part of Environmental & Social Impact Assessment (EISA) Study Report of July, 2011 for proposed coal, cement & clinker terminal at Port Muhammad Bin Qasim the management should widen the approach roads for carrying additional traffic and rerouting/ scheduling of traffic movements to avoid traffic conflicts, congestion and delays within PQA limits.

During audit of Environmental Implications of LNG and Coal Terminals at PQA, Karachi, it was observed that as per recommendations clause referred above, for mitigation of external impact of traffics, the PQA was required to widen the approach roads for accommodating additional traffic and rerouting/ scheduling of traffic

movements to avoid traffic conflicts, congestion and delays within PQA limits. During visit of the terminal, it was also observed that the roads of adjoining areas of terminal have only two lane road and were not widened for additional traffic.

Audit was of the view that the PQA has not taken measures for widening approach road for additional traffic to avoid conflicts, congestion and delays.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that the management of PQA should widen the approach road as per Traffic impact assessment report.

4.1.2 Non-framing of incidence management plan

According to recommendation clause 4.2.3 of traffic impact assessment report part of EISA Study Report of July, 2011 for proposed coal, cement & clinker terminal at Port Muhammad Bin Qasim the management should have framed incidence management plan for breakdown of vehicles along main travel corridors / arteries causing queuing of vehicles, congestions & delays and traffic controls under bad weather conditions to avoid accidents and losses.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA Karachi for the year 2015-19, it was observed through physical visits and subsequent discussion with management that PQA did not frame any incidence management plan for breakdown of vehicles along main travel corridors / arteries causing queuing of vehicles, congestions & delays and traffic controls under bad weather conditions to avoid accidents and losses.

Audit was of the view that PQA has not framed any incidence management plan as recommended under traffic impact assessment report.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that the PQA's management should frame incidence management plan according to the guidelines of traffic impact assessment report.

4.1.3 Non-provision of interchange along the National Highway for safe entry / exit to avoid pollution

According to recommendation clause 4.2.4 of traffic impact assessment report part of ESIA Study Report of July, 2011 for proposed coal, cement & clinker terminal at Port Muhammad Bin Qasim the management should have establish interchange along the National Highway N-5 for safe entry / exit of heavy traffic movement.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi, it was observed that as per recommendation clauses referred above PQA was required to establish interchange along the National Highway N-5 for safe entry / exit of heavy traffic movement.

Audit was of the view that it was recommended in the traffic impact assessment report that PQA should prioritize to plan / construct interchange along the National Highway N-5 in order to avoid un-necessary delays, congestion, environmental pollution, economic losses and any traffic accidents.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit requires the management to explain the reasons for not constructing the inter-change along the National Highway N-5.

4.1.4 Lack of policy & qualified professionals in Environment & Safety Department of PQA

Section-71-B of PQA Act, 1973, Port to be pollution free, etc. provides (1) The Authority shall be responsible for maintaining the marine environments of the port's limit in order to ensure that the sea, land, and air is free from pollution.(2) No Owner, Agent or Master of a vessel, or any industry, manufacturing establishment, mill, factory or any kind, cargo handling company, terminal operator, etc., shall discharge any solid or liquid, waste, oily, noxious radioactive and hazardous substances, bilge discharges, residues and mixtures containing noxious solid and liquid wastes, de-blasting of un-washed cargo tanks and line washing, garbage, emission of any effluent or waste or air pollution or noise in any amount concentration or level in excess of the National Environmental Quality Standards, or standards, which may be specified, from time to time, by the Authority for Port limits.(3) Any person contravening the provisions of sub-section (2) shall be liable to penalty as determined and notified by the authority from time to time for each contravention in addition to the charges for cleaning of the Port and removal of pollution therefrom.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi, it was observed from the record that before signing of the Implementation Agreement with the proponent /operator for the establishment of the Terminal/project in the vicinity of the PQA there was a need to ascertain whether the Terminal/project was likely to result in significant irreversible impacts to essential parameters of ecological integrity; and to ensure optimal planning and execution of any habitat restoration and offset designed to mitigate Terminal/project impacts. Further, the project would not result in inadequately mitigated direct or indirect impacts to a species or habitats with special conservation status i.e. survey of dedicated land of terminals that how much mangroves were there, habitat of the sea etc. Thus, for this purpose PQA had established Environment & Safety Department.

The staff of the department included a Director, Dy. Manager, Fire Fighting Officer, Inspector Sanitation, LDC, Khalasi, Naib Qasid, UDC, Mali, and staff of Fire Fighting Section. As per Budget estimates of the department for 2019-20, expenditure was Rs.268.597 million.

Audit was of the view that despite heavy expenditure, PQA Environment & Safety Department has not taken any proactive steps regarding the above mentioned functions. This reflected inaction on its part.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit was of the view that the management has no SOP/ policy and required professional staff to monitor the environmental safety and the management has failed to act in accordance with the PQA Act.

Audit recommends that the management should make the environment and safety department more effective, bringing it in line with international standards by inducting qualified/ professional staff in the department under intimation to Audit.

4.1.5 Non-development of PQA Environmental Policy / SOP

Section-71-Bof PQA Act, 1973, Port to be pollution free, etc. provides (1) The Authority shall be responsible for maintaining the marine environments of the port's limit in order to ensure that the sea, land, an air is free from pollution.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi, it was observed from the record that in compliance of the above clause management of PQA was responsible to draft and implement an Environmental Policy in order to ensure the Port's environment free from pollution.

Audit observed that management did not draft any Environmental Policy. In absence of Environmental Policy management was unable to maintain port free from pollution. Further, it was not possible to validate the extent to which all mitigation measures were being implemented as recommended in Environment & Social Impact Assessment (ESIA) and Environmental Monitoring Plan (EMP) as the port was rich in flora and fauna i.e. different species of mangroves and marine life etc.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends formulation of Environmental Policy to ensure that Port's environment is free from pollution.

4.1.6 Non-examination of assessment reports in respect of environmental impact of LNG & Coal Terminals

PQA Act 1973, Section 71C. Environmental Pollution etc.,(1) No proponent of a project shall commence construction or operation unless he has filed with this Authority an initial environmental examination or, where the project is likely to cause an adverse environmental effect, an environment impact assessment, and has obtained from the authority approval in respect thereof.

(2) The Authority shall:-

- a. review the initial environmental examination and accord its approval, or required submission of an Environmental Impact Assessment by the proponent; or
- b. review the Environmental Impact Assessment and accord its approval subject to such condition as it may deem fit to impose, or require that the Environment Impact Assessment be re-submitted after such modification as may be stipulated.

During audit of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that management did not examine the Initial Environmental Examination (IEE)/ Environment Impact Assessment (EIA) and allowed the proponent to construct and operate the LNG/Coal Terminals.

Audit was of the view that this act of management is a serious violation of PQA Act, 1973.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management should probe the matter for fixing responsibility on the person (s) found at fault under intimation to audit.

4.1.7 Non-inspection of vessels/carriers at LNG/Coal Terminals by Environment & Safety Department

PQA Act, 1973 section-71-B. Port to be pollution free, etc provides (1) The Authority shall be responsible for maintaining the marine environments of the port's limit in order to ensure that the sea, land, an air is free from pollution.

(2) No Owner, Agent or Master of a vessel, or any industry, manufacturing establishment, mill, factory or any kind, cargo handling company, terminal operator, etc., shall discharge any solid or liquid, waste, oily, noxious radioactive and hazardous substances, bilge discharges, residues and mixtures containing noxious solid and liquid wastes, de-blasting of un-washed cargo tanks and line washing, garbage, emission of any effluent or waste or air pollution or noise in any amount concentration or level in excess of the National Environmental Quality Standards, or standards, which may be specified, from time to time, by the Authority for Port limits.

(3) Any person contravening the provisions of sub-section (2) shall be liable to penalty as determined and notified by the authority from time to time for each contravention in addition to the charges for cleaning of the Port and removal of pollution therefrom.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that management did not inspect the vessels / carriers arrived at LNG / Coal Terminals. Audit team requested the management through Requisition No.8 dated 11-03-2020 (Sr. No. 3) to provide Challan Books of Marine Pollution Control Centre reflecting Inspection of Vessels / Carriers which arrived at LNG and Coal Terminals, but the same were not provided to audit team.

Audit was of the view that neither the management inspected the vessels / carriers which arrived at LNG and Coal Terminals nor maintained the Challan Books of Marine Pollution Control Centre. Thus, non-inspection of vessels / carriers at LNG

/ Coal Terminals by Environment & Safety Department may cause discharge of hazardous waste i.e. noxious radioactive, bilge discharges, residues and mixtures containing noxious solid and liquid wastes, de-blasting of un-washed cargo tanks and line washing, garbage, emission of any effluent or waste or air pollution etc. in vicinity of Port limits.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management should investigate the matter that why the vessels/carriers were not inspected and also ensure monitoring the vessels/carriers in future.

4.1.8 Allocation of area to LNG Terminals against the PQA Master Plan

PQA Act, 1973 Chapter III, Section 10 on Master-plan and Master-Programme, the Authority shall prepare a master-plan and a phased master-programme for the development of the Port area and the plan and programme shall be submitted to the Federal Government for approval.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from the record that allocation of land for the proponent/operators as on Build, Operate & Transfer (BOT) basis for LNG/ Coal Terminals was made against the Master Plan of PQA.

After scrutiny of PQA Master Plan, it came to notice that the Master Plan was approved by the BoD in 2010. As per BOD approved Master Plan, there was no allocation of area of land designated for the purpose of LNG / Coal Terminals, despite the fact that Federal Government had announced LNG Policy in 2006.

Audit was of the view that management allocated land for LNG/Coal Terminals without taking proper approval from Government of Pakistan. Furthermore, Master Plan was also not approved from Government of Pakistan. Resultantly, there are chances that the management may ignore the security and safety of the port area by allocating land to the LNG / Coal terminals.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management should get approved its Master Plan from Concerned Ministry/ Government of Pakistan and then allocate the land for LNG/ Coal terminals.

4.1.9 Non-development of PQA contingency plan in respect of safety and security of LNG Terminals

PQA Act, 1973 Chapter II, Section 5. Management.(1) The general direction and administration of the Authority and its affairs shall vest in the Board which may exercise all powers and do all acts and things which may be exercised or done by the Authority.

(2) The Board in discharging its functions shall act on sound principles of port planning and development and port management and shall be guided on questions of policy by such direction as the Federal Government may, from time to time, give.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that no Contingency Plan was prepared by the management in respect of safety and security of LNG Terminals.

Audit observed that as LNG carriers/vessels having a capacity of 151,000 cubic meters to carry LNG and Floating, Storage and Re-gasification Unit (FSRU) having a capacity of 151,000 cubic meter to store LNG were operating. Further, a number of vessels/carriers arrived at LNG Terminals rapidly during the year. Thus, there is a great need to make the port area safe and secure.

Audit was of the view that due to non-development of PQA Contingency Plan the management ignored the sound principles of port planning and management regarding the safety of off-shore and on-shore area of port.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management should develop Contingency Plan in respect of safety and security of off-shore and on-shore area of port.

4.1.10 Non-development of Disaster Management Plan in PQA

PQA Act, 1973 Chapter II, Section 5. Management.(1) The general direction and administration of the Authority and its affairs shall vest in the Board which may exercise all powers and do all acts and things which may be exercised or done by the Authority.

(2) The Board in discharging its functions shall act on sound principles of port planning and development and port management and shall be guided on questions of policy by such direction as the Federal Government may, from time to time, give.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that the management did not develop the PQA Disaster Management Plan. In this regard audit team requested the management through Requisition No:7 dated: 11-03-2020 Sr. No. 6 &7 for provision of PQA Disaster Management Plan or steps taken in this regard. But the same were not taken in this regard.

Audit was of the view that in port area there are 2 LNG Terminals and 3 Coal Terminals. Moreover, chemical and crude oils are also handled at PQA. In spite of this, port management ignored mitigating measures to be adopted in case of a disaster. Thus, management violated PQA Act by ignoring sound planning and management of port.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management should develop Disaster Management Plan under intimation to audit.

4.1.11 Non-establishment of Rail link from PIBT Terminal to main line track of Pakistan Railway

Implementation Agreement (IA) was signed on 6th day of November 2010 between PQA and PIBT. Article 6.4 (b) Railway Line and Facilities for Loading / Unloading of Wagons, states,

“Provided the right of way subject to payment of PQA Charges for the extension of the railway line up to the Terminal. However, the Company will be responsible for negotiations with Pakistan Railways for any extension of such railway line. The Company shall develop the facilities for loading/ unloading of wagons within the area allocated for the Terminal.”

During audit of Environmental Implications of LNG and Coal Terminals at PQA, Karachi, it was observed from monthly progress report of September 2014 Section 1 Executive Summary, 1.3 (b) Railway Link: that meetings were held between PIBT, PQA and Pakistan Railways to connect the PIBT Terminal area to main Railway line at an appropriate location. Pakistan Railway was to prepare a prefeasibility study. It was also decided to appoint a reputable consultant for carrying out feasibility Study for doable and financially viable option.”

Audit observed that there was no Rail link from PIBT Terminal to main line track of Pakistan Railway. Coal/clinkers were transported from PIBT Terminal to upcountry through vehicles causing a serious air pollution and traffic congestion.

Audit was of the view that PIBT neither paid any amount to PQA for providing right of way for the extension of railway line up to the PIBT Terminal nor developed the facilities for loading /unloading of wagons within the area allocated for PIBT Terminal. Resultantly, after lapse of more than 5 years no progress was made for establishment of Rail link from PIBT Terminal to main line track of Pakistan Railway.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management should take action to construct the Rail link from PIBT Terminal to main line track of Pakistan Railway.

4.1.12 Non-preparation of Environmental Management and Monitoring Plans

Environmental Protection Agency, Government of Sindh through its letter dated 17-06-2014, accorded its approval subject to the following conditions: Para # 5 (x) Implementation of Environmental Management Plan, components of mitigation, monitoring, communication and environmental training will be the sole responsibility of proponent.

Para # 6 This approval shall be treated as null and void if the conditions mentioned in this approval are not complied with or any violation of SEP Act, Rules, Regulations, Guidelines and instructions there under is committed by proponent or his/her agent or employee.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from EIA Coal Jetty, Shipping Lane and Ash Disposal Site for PQEPC 2X660 MW Coal Power Plant that the detailed Environmental Monitoring Plan would be finalized by PQEPC management prior to commencement of construction and operation of the project and then prepare Environmental Management Plan (EMP) on the basis of detail available on the construction phase of the project.

Audit was of the view that the management neither finalized Environmental Monitoring Plan nor prepared Environmental Management Plan which was a violation of SEPA approval.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that PQEPC management should finalized Environmental Monitoring Plan along with detailed / amended EMP.

4.1.13 Environmental pollution due to storage of coal under the open sky

The Sindh Environmental Protection Act, 2014 Part-V on Prohibitions and Enforcement, Clause 11 (1), states that subject to the provisions of this Act and rules and regulations, no person shall discharge or emit or allow the discharge or emission of any effluent, waste, pollutant, noise or any other matter that may cause or likely to cause pollution or adverse environmental effects.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed during the visit of Pakistan International Bulk Terminal (PIBT) that the coal was lying / stored under the open sky at the coal yard. For coal dust protection the operator installed wind fences at the outside boundary wall of the terminal.

Audit team during their visit of the PIBT terminal observed that wind fence boundary wall failed to protect the environment from coal dust as it was found in the port vicinity. Furthermore, it was observed that operator did not have any system to protect the coal in a rainy season as the coal lying/ stored under the open sky can damage marine life. Thus, unsafe management of coal causes environmental pollution.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that the operator should cover the coal yard area to avoid coal dust emission into the environment of port vicinity.

4.1.14 Air and water pollution due to open conveyor belt for coal

The Sindh Environmental Protection Act, 2014 Part-V on Prohibitions and Enforcement Clause 11 (1) states that subject to the provisions of this Act and rules and regulations, no person shall discharge or emit or allow the discharge or emission

of any effluent, waste, pollutant, noise or any other matter that may cause or likely to cause pollution or adverse environmental effects.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed during the visit of Pakistan International Bulk Terminal (PIBT) that the coal / clinker were transferred from cargo ship with the help of conveyer belt to the coal / clinker storage area at terminal. The conveyer belt was designed in open style without protection walls because of this coal particles slipped out from the conveyer belt throughout the journey i.e. from cargo ship to coal storage area at terminal.

Audit team during their visit at the PIBT terminal observed that major part of the conveyer belt passed over the sea water. As the conveyer belt was open it was observed that coal particles dropped into the sea water along with coal dust spreading in the area with blowing wind, resulting in air and marine pollution.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that the operator should use tabulated conveyer belt as used for clinker.

4.1.15 Risk of spread of lung cancer, cardiovascular & respiratory diseases in PQA vicinity due to low standards of ambient air issued/set by SEPA

The Pakistan Environmental Protection Agency established National Environmental Quality Standards (NEQS) for Ambient Air.

The Sindh Environmental Protection Agency established Sindh Environmental Quality Standards (SEQS) for Ambient Air.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that standard of ambient air issued/set by Sindh Environmental Protection Agency was relaxed as

compared to Pakistan Environmental Protection Agency (PEPA). Comparison is as under:

NEQS for ambient air	Respirable Particulate Matter. PM_{2.5}	24 hours	35 µg/m³
SEQS for ambient air	Respirable Particulate Matter. PM _{2.5}	24 hours	75 µg/m ³

Pakistan Gas Port Consortium Ltd ambient air quality test report dated 30-01-2020 showed the Respirable Particulate Matter (PM_{2.5}) results (**Annex-A**).

The effects of PM_{2.5} particles can cause lung cancer and various cardiovascular and respiratory diseases.

Audit was of the view that as SEPA relaxed the quality standards of ambient air which may cause lung cancer and various cardiovascular and respiratory diseases in the vicinity of PQA.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends the PQA management to approach SEPA authorities for improving the air quality in the vicinity of PQA in accordance with NEQS.

4.1.16 Non-setting of standard criterion for CO₂ emission by NEQS/SEPA

The Pakistan Environmental Protection Agency established National Environmental Quality Standards (NEQS).

The Sindh Environmental Protection Agency established Sindh Environmental Quality Standards (SEQS).

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that the Pakistan Environmental Protection Agency established National Environmental Quality Standards (NEQS) and the Sindh Environmental Protection Agency established Sindh

Environmental Quality Standards (SEQS) for setting criteria for pollutants to protect the air quality for human health.

The principal Greenhouse Gases (GHG) are methane, carbon dioxide (CO₂) and nitrous oxide (N₂O) which trap heat in the atmosphere and are the primary drive of the increase in global mean temperature.

During scrutiny of the Environmental & Social Impact Assessment of PGPC Ltd. it was observed that Greenhouse Gas (GHG) emissions from proposed LNG Terminal operation have been estimated at 9,463 tons CO₂ equivalents (**Annex-B**).

Audit was of the view that there was no standard regarding the carbon dioxide (CO₂) emission established by PEPA/SEPA for monitoring the ambient air quality.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends the PQA management to approach PEPA/SEPA authorities for measurement and control of CO₂ emission to acceptable level for ensuring better air quality.

4.1.17 Non-compliance with Environmental & Social Impact Assessment reports

According to Environmental Protection Agency, Government of Sindh: (Ref No: EPA/2013/3/13/EIA/32 dated 07-06-2013, Para No.5 (ii)) Mitigation measures recommended in the EIA report shall be strictly adhered to minimize any adverse impact on soil, ambient air quality, biological resources and marine ecosystem in the project area. The commitment made by the proponent in response to the objections raised during the review period and in the public hearing; shall be strictly followed.

Environmental & Social Impact Assessment Chapter-3, Stakeholder Consultation, 3.1 Objectives: request the stakeholders to share information on significant physical, biological and socioeconomic environment that must be taken

into consideration during different stages of the Project, and measures to be adopted to minimize the severity of impact.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from Environmental & Social Impact Assessment of PGP Consortium Ltd. that the centre of excellence of Marine Biology recommends that as the benthic community was found at top 10-15 cm of the soil, it should therefore be ensured that the top soil is preserved by placing it separately at such place where it can return and get rehabilitated. While at the time of dragging for construction of berth/terminal at port area management of PGPC ignored centre of excellence of Marine Biology which recommends to protect the top soil before starting the dragging work and then placed the top soil separately in order to preserve the benthic community, largely composed of macro invertebrates, such as annelids, mollusks, and crustaceans (These organisms inhabit the bottom substrates of estuaries and play a vital role in maintaining sediment and water quality).

Audit was of the view that the PGPC has not taken mitigation measures for preserving the top soil by placing it separately in order to rehabilitate the benthic community.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management fix responsibility upon the person(s) found at fault.

4.2 Monitoring

4.2.1 Excess emissions of sulphur dioxide causing/ resulting into serious Environmental Pollution

As per revised National Environmental Quality Standards (NEQS) for Industrial Gaseous Emissions (mg/Nm³.) is as follows:

Sulphur Dioxide	
Sulphur Dioxide Background Levels (ug/m³)	
Background Air Quality	Annual Average
(SO ₂ Basis)	
Unpolluted	< 50
Moderately Polluted:	
Low	50
High	100
Very Polluted	> 100

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from Gaseous Emission Test Report prepared by Independent Environmental Monitoring Consultant of Pakistan Gas Port Consortium Ltd. (PGPCL) that the percentage of Sulphur dioxides (SO₂) in the air was much higher from the Sindh Environmental Quality Standards (SEQS) (**Annex-C**).

It is evident from the above Gaseous Emission Test Report performed by the (IEMC) in compliance of SEPA that Sulphur dioxides concentrations exceeded the annual SEQS.

Audit was of the view that the excess emission of Sulphur dioxides caused serious environmental pollution. Thus, M/s. PGPCL violated SEQS limits and SEPA terms and conditions as mentioned in its approval.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that PGPCL take mitigating measures to control the excess emission of Sulphur Dioxides in the port vicinity in accordance with NEQS/SEQS limits.

4.2.2 Non-monitoring of water and sediment quality of discharged sewerage & industrial effluent by PQA

According to potential environmental impact due to waste discharge under final ESIA study Report of July, 2011 for proposed coal, clinker & cement terminal at

Port Qasim a monitoring system should be adopted by the PQA to keep close watch on the water and sediment quality of discharged untreated sewerage and industrial effluent into the mudflats and the creeks that creates adverse effects on water quality.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed as per final ESIA Study Report of July, 2011 that neither a monitoring system had been adopted by the PQA to keep close watch on the water and sediment quality of discharged untreated sewerage and industrial effluent into the mud flats and the creeks nor any treatment plant installed which creates adverse effects on water quality.

Audit was of the view that the industrial zones of PQA and terminals are discharging their untreated waste water into the sea water which does not meet with NEQS standards hence the seawater at the coastline has been degraded / contaminated.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that the PQA should install effluent treatment plant before discharging of waste water into the sea.

4.2.3 Marine pollution caused by cadmium in sea water

London Convention 1972: In 1972, the London Convention on the Prevention of Marine Pollution by Dumping of wastes and other Matter defines a Black List of toxic substances, and a Grey List of less hazardous substances that may only be dumped under a prior special permit... Pakistan is signatory to the London Convention

Black List of toxic substances:

- i. Organ halogen Compounds;
- ii. Mercury and Mercury Compounds;
- iii. Cadmium and Cadmium Compounds;

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from the record of PGP Consortium Ltd. that an Independent Environmental Monitoring Consultant Report (June-July-August, 2019) of Sea Water Quality Lab Reports dated 01-08-2019 showed Cadmium 0.003 mg/l. Detail is as under:

Parameter	Unit	Result	Method
Cadmium	mg/l	0.003	Atomic Absorption Spectrophotometry

Audit was of the view that M/s. PGPCL requested Independent Environmental Monitoring Consultant to test its sea water samples. Therefore, test Report of Independent Environmental Monitoring Consultant showed the results that Cadmium was found in sea water samples. Existence of Cadmium in sea water showed Marine Pollution. Thus, M/s. PGPCL violated the above London Convention.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that PGPCL management should take mitigating measures to minimize the existence of Cadmium in sea water as per London Convention 1972.

4.2.4 Air pollution due to non-compliance of SEPA standards

Environmental Protection Agency, Government of Sindh:

Para No.5 (ii) Emissions from stacks and the ambient air quality will be monitored to ensure compliance of Environmental Quality Standards in force.

Para No.6 This approval and any considerations thereof shall be treated as null and void, if the above mentioned conditions are not complied with.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from quarterly environmental monitoring reports of Pakistan International Bulk Terminal (PIBT) prepared by M/s. EMC Pakistan Pvt. Ltd. an Independent Monitoring Consultant

(IMC) to monitor the implementation of PIBT with the Environmental Management Plan (EMP) (**Annex-D**).

Audit was of the view that above mentioned results are not within acceptable limit as described in Sindh Environmental Quality Standard (SEQS) limits. Consequently, air is polluted.

Air pollution is a major environmental risk and can cause diseases like stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that PIBT take mitigating measures in the light of NEQS/SEQS limits.

4.2.5 Non-taking of mitigation measures to overcome air pollution

According to recommendation clause 4.2.2 of traffic impact assessment report part of EISA Study Report of July, 2011 for proposed coal, cement & clinker terminal at Port Qasim that PQA plant more trees to overcome air pollution due to vehicular exhausts outside the boundary wall of terminal

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that no trees were planted by PQA to overcome air pollution due to vehicular exhausts outside the boundary wall of terminal. In response to audit requisition the environment department of authority replied that they did not plant any tree outside the terminal since its construction i.e. year 2011.

Audit was of the view that the PQA has not taken mitigation measures by plantation of trees to overcome air pollution.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that PQA management should plant trees outside the terminal of PQA.

4.2.6 Marine pollution due to excessive chemicals in sea water

As per National Environmental Quality Standards (NEQS) following are the admissible limits:

Descriptions	NEQS Limits
Biochemical Oxygen Demand (BOD)5	80
Chemical Oxygen Demand (COD)	150
Oil & Grease	10

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from Wastewater Test Results prepared by Independent Monitoring Consultant M/s. EMC Pakistan Pvt. Ltd. of M/s. Engro Elengy Terminal (Pvt.) Ltd. (EETL) that the waste water from ship discharge as a result of BoD, COD, TDS, TSS and Oil and Grease were higher than the National Environmental Quality Standards (NEQS) (**Annex-E**).

Audit was of the view that above mentioned results are not within acceptable level as described in National Environmental Quality Standard (NEQS) limits. Consequently, Sea water is polluted.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends EET management should take mitigating measures to maintain the BOD and COD within the acceptable limits as per NEQS/SEQS limits.

4.2.7 Non-conducting of study on impact of dredging and land reclamation on the coastline

As per Environmental Protection Agency, Government of Sindh's approval vide Ref. No:EPA/2014/8/29/EIA/17 dated 30-01-2015,para 5 (XII), PQEPC should undertake detailed Study to foresee impacts of dredging and land reclamation on the coastline. This study would be done after two years of the start of project operations and the report should be submitted to Environmental Protection Agency (EPA).

Para-6, "This approval shall be treated as null and void if the conditions mentioned in this approval are not complied with or any violation of SEP Act, Rules, Regulations, Guidelines and instructions there under is committed by the Proponent or his/her agent or employee".

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that the project was operational since February, 2018. The management of Port Qasim Electric Power Company (Pvt.) Ltd. (PQEPC) has not submitted the detailed Study to foresee impacts of dredging and land reclamation on the coastline to the Sindh EPA as per the conditions laid down in the SEPA approvals.

Audit was of the view that SEPA issued NOC with conditions laid down in its approval. Thus, non-submission of detailed Study to foresee impacts of dredging and land reclamation on the coastline to the Sindh EPA is clear violation of SEPA NOC.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that management should submit the detailed Study to foresee impacts of dredging and land reclamation on the coastline to the Sindh EPA under intimation to Audit.

4.2.8 Non-calibration of continuous emission monitoring system from third-party

Agreement for Port Qasim Coal-Fired Power Project between Port Qasim Authority Karachi and Port Qasim Electric Power Company (Pvt.) Ltd On 23rd April, 2015 for setting up and operating a 1320 MW (660 X 2 MW) electric power generation facility and the Jetty at Port Muhammad Bin Qasim, Karachi, Pakistan. Article -3 (3.7) states that “the Company shall take all measures necessary to prevent hazards to human safety and health, property and to the environment consistent with the Laws of Pakistan that may arise from any activity concerning the construction, operation or maintenance of all or any part of the Jetty”.

As per Environmental Protection Agency, Government of Sindh approvals vide Ref. No:EPA/2014/8/29/EIA/17 dated 30-01-2015, Para-7, a qualified and experienced Independent Monitoring Consultancy firm would be engaged by the proponent to monitor the implementation of the EMP and the conditions of this approval.

Para-6, This approval shall be treated as null and void if the conditions mentioned in this approval are not complied with or any violation of SEP Act, Rules, Regulations, Guidelines and instructions there under is committed by the Proponent or his/her agent or employee.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed that the management of Port Qasim Electric Power Company (Pvt.) Ltd. (PQEPC) was calibrated the Continuous Emission Monitoring System (CEMS) from its operation and maintenance contractor.

PQA through a letter No. PQA/E&S/Boil-01/2018 dated 18-12-2019 require PQEPC to conduct independent third-party calibration or verification of the Continuous emission monitoring system (CEMS).

Audit was of the view that the result of calibration of Continuous emission monitoring system (CEMS) through PQEPC’s operation and maintenance contractor was not justified. Thus, avoidance of conducting the calibration of (CEMS) through an independent third-party calibration agency is the violation of above rule.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that PQEPC management should conduct the calibration of (CEMS) through an independent third-party calibration agency under intimation to Audit.

4.2.9 Non-installation of devices for pollution control

PQA Act, 1973 Section 71B. Port to be pollution free, etc.- (1) The Authority shall be responsible for maintaining the marine environments of the port's limit in order to ensure that the sea, land, and air is free from pollution.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from the record that approvals/NOC issued to proponents for the construction and operations of LNG/Coal Terminals were issued without installation of Pollution Abatement Devices.

Pollution Abatement Devices are those designed particularly to combat pollution by reducing the amount or concentration of, or eliminating pollution.

Audit was of the view that non-installation of Pollution Abatement Devices could result in atmospheric pollution causing respiratory problems such as silicosis, lung cancer and bronchitis etc.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends that NOC may be issued to only those proponents who installed Pollution Abatement Devices.

4.2.10 Oil spillage/ leakages at coal jetty of PQEPC creating negative impact on marine life and humans

EIA of Coal Jetty, Shipping Lane and Ash Disposal Site for Pakistan Port Qasim Electric Power Project 2 x 660 MW Coal Power Plant Final Report August 26,2014 Clause # 1.7 Project Impacts and Mitigation states that “during the operational phase, coal spills from the jetty, and fuel leaks, ballast water and waste discharges from ships docked at the coal jetty may also adversely impact sea water quality. However, the operation of the Coal Jetty will take place under strict compliance....”

As per Environmental Protection Agency, Government of Sindh letter dated 30-01-2015 Para # xvi, an effective solid waste management system would be developed which would cater to collection, transfer, recycling and final disposal of waste to a designated landfill site. The plan must address on site segregation of solid waste to promote its reuse and recycling. The oily sludge generated from oil storage tank during construction and operation of the project would be disposed off in accordance to best available practices, for which an inventory will be maintained for inspection and verification.

Para #6 states that “this approval shall be treated as null and void if the conditions mentioned in this approval are not complied with or any violation of SEP Act, Rules, Regulations, Guidelines and instructions there under is committed by proponent or his/her agent or employee”.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from Environmental Audit Report March, 2018 prepared by Global Environmental Management Services Pvt. Ltd. Chapter # 3 Key Findings and Assessment Exhibit 3.10: Visual inspection was carried out to investigate any oil spill or leakages which may degrade the soil quality. The environmental specialists of GEMS after critical audit gave observation /key finding that some evidences of oil spillage or leakages at coal jetty were observed that required special consideration to minimize future incidents.

It is important to note that SEPA issued NOCs have some conditions which have to be fulfilled by PQEPC and for this PQEPC has hired GEMS to assess the compliance status of recommended mitigation measures provided in Environmental

Management Plan (EMP) of EIA reports and conditions mentioned in the issued NOCs.

Audit was of the view that due to oil spillage/ leakages at coal jetty, the marine life consisting of the marine benthic invertebrates, phytoplankton, mangroves and fish suffered negative impacts. Moreover, edible species of fish and crabs were contaminated; the negative health impacts will be transferred to other organisms in the food chain including humans. Thus, the management of PQEPC has violated the SEPA conditions as mentioned in NOC along with EIA and EMP.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends action taken in the light of SEP Act.

4.2.11 Air pollution caused by NO & CO emission against NEQS Standards

Pakistan Environmental Protection Act (PEPA), 1997, Clause 16, Environmental Protection Order, states that “(1) Where the Federal Agency or a Provincial Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the disposal of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring or has occurred in violation of the provisions of this Act, rules or regulations or of the conditions of a license, and is likely to cause, or is causing or has caused an adverse environmental effect, the Federal Agency or, as the case may be, the Provincial Agency may, after giving the person responsible for such discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures that the Federal Agency or Provincial Agency may consider necessary within such period as may be specified in the order”.

“17) Penalties (1) Whoever contravenes or fails to comply with the provisions of section 11, 12, 13, or section 16 or any order issued thereunder shall be punishable with fine which may extend to one million rupees, and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues”.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, it was observed from quarterly environmental monitoring reports of M/s. Engro Elengy Terminal Pvt. Ltd. (EETPL) prepared by M/s. EMC Pakistan Pvt. Ltd. as Independent Monitoring Consultant (IMC) for the period June to August 2015 to monitor the implementation of EETPL with the Environmental Management Plan (EMP) (**Annex-F**).

Audit was of the view that above mentioned results are not within acceptable limits as described in National Environmental Quality Standard (NEQS) limits. Consequently, it created air pollution in the vicinity of PQA.

Air pollution is a major environmental risk to health which may cause diseases like stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Audit recommends as per PEPA Act 1997, an amount against penalties may be recovered from EETPL under intimation to Audit, besides, taking steps to keep emission results within acceptable limits.

4.3. Asset Management

4.3.1 Non-production of record

Port Qasim Authority Act 1973, Section 57 (3) states that, “--- the Authority shall, at the time of such audit, produce the account books and connected documents and such place or places as the Auditor General may, and furnish such explanation and information as the Auditor General or an officer authorized by him in this behalf may ask for”. Section 57(7) states that, “The authority shall comply with every directions issued by the Federal Government for the rectification of matters objected to in audit”. Further in DAC meeting held on 30-01-2014 in Pakistan National Shipping Corporation (PNSC) building Secretary Port & Shipping gave a very strict

instructions that any person who failed to provide the auditable record would be personally held responsible.

During Special Study of Environmental Implications of LNG and Coal Terminals at PQA, Karachi for the year 2015-19, 23 requisitions were issued out for production of record but the same was not produced to Audit for examination (**Annex-G**).

Audit was of the view that non-production of the record/information is a violation of the Auditor General of Pakistan Ordinance, 2001 Section 14 (a), 2 & 3, Port Qasim Act 1973 and Secretary, Port and Shipping's instructions. This attitude of the management was tantamount to concealment of facts and figures from Government Audit.

The matter was reported to the management in April, 2020, but no reply was received.

Despite request and subsequent reminders on 04.03.2021, 16.04.2021, 24.05.2021 and 23.09.2022, DAC meeting was not convened by the PAO.

Action may be taken against the person (s) responsible for non-production of auditable record.

5. CONCLUSION

In view of study findings given in the preceding section, Audit concluded that PQA and Proponent / Operators have not duly complied with various provisions of Pakistan Environmental Protection Act, 1997 and Sindh Environmental Protection Agency Act, 2014 as safety measures have not been adopted in storage of coal, rail link from PIBT terminal to main line track of Pakistan Railway has not been established, standard criteria for CO₂ emission by NEQS/SEQS have not been set, and water sediment quality of discharged sewerage and industrial effluent has not been monitored by PQA. Besides, vessels / carriers at LNG / Coal terminals have not been inspected by Environment & Safety Department of PQA.

ACKNOWLEDGEMENT

We wish to express our appreciation to the Management and Staff of Port Qasim Authority, Karachi, M/s Engro Elengy Terminal (Private) Limited (EETPL), M/s. Fouji Oil Terminal & Distribution Company Ltd. (FOTCO), M/s. Pakistan International Bulk Terminal (PIBT), Port Qasim Energy Power Company Limited (PQEPCL) and M/s. Huneng Fuyun Ports & Shipping, China, Karachi for the assistance and cooperation extended to the auditors during this assignment.

Risk of spread of lung cancer, cardiovascular & respiratory diseases in PQA vicinity due to low standards of ambient air issued/set by SEPA

Annex-A: Statement showing the lab test results of air quality as compared to NEQS limits

(Para No.4.1.15)

S#	Location	Unit	SEQS Limits	NEQS Limits	Results
1	Mooring Dolphin 03	µg/m ³	75	35	47
2	Working platform	µg/m ³	75	35	46
3	Breasting Dolphin 01	µg/m ³	75	35	40
4	Muster Point	µg/m ³	75	35	38
5	Mooring Dolphin 02	µg/m ³	75	35	50
6	Breasting Dolphin 01	µg/m ³	75	35	37
7	Working platform	µg/m ³	75	35	43
8	Muster Plant A	µg/m ³	75	35	49
9	Mooring Dolphin	µg/m ³	75	35	39

Non-setting of standard criterion for CO₂ emission by NEQS/SEPA

Annex-B: Statements showing the results of lab test report of CO₂ emission

(Para No.4.1.16)

Ship size(m ³)	137,000	145,000	155,000	210,000	265,000
Diesel Consumption (t/day)	35	35	25	30	35
t CO ₂ -e/t Diesel fuel	3.4064	3.4064	3.4064	3.4064	3.4064
LNG BOG consumption (t/day)	369.53	389.69	416.56	Nil	Nil
t CO ₂ -e/t LNG BOG	2.4173	2.4173	2.4173	2.4173	2.4173
Greenhouse Index (t CO ₂ -e/t LNG)	0.028779	0.027896	0.011376	0.010083	0.008859
Average inflow gas quality (Btu/scf)	109.2	109.2	109.2	109.2	109.2
Average emissions (g CO ₂ -e/MJ of LNG delivered)	1.5702	1.5220	0.6207	0.5501	0.4833

(Source: Life Cycle Assessment (LCA) of Liquefied Natural Gas (LNG) by Paul Jonathan Barnett.)

Excess emissions of Sulphur Dioxide causing/ resulting into serious Environmental Pollution

Annex-C: Statement showing lab test results of Sulphur Dioxides in the air as compared to SEQS limits

(Para No.4.2.1)

Date	Description	Parameter	Unit	SEQS Limit	Result
14-06-2019	Generator # 1 (200 KVA)	Sulphur dioxides (SO ₂)	mg/Nm ³	100	105.82
22-07-2019	Fire Pump Engine #2	Sulphur dioxides (SO ₂)	mg/Nm ³	100	168.74
22-07-2019	Generator #1 (220 KVA)	Sulphur dioxides (SO ₂)	mg/Nm ³	100	280.28

Air pollution due to non-compliance of SEPA standards

Annex-D: Statements showing the lab test results of air emissions as compared to SEQS limits (Para No.4.2.4)

S#	Test Report No.	Sampling description	Name of Sample Test	Results	SEQS (Limit)
1	QTS/PIBT/17/4204 B	Ambient (outdoor) Air	PM 10 (ug/m3)	168	150
2	QTS/PIBT/17/4204 C	Ambient Air	PM 10 (ug/m ³)	156	150
3	QTS/PIBT/17/4291 B	Ambient Air	PM 10 (ug/m ³)	185	150
4	QTS/PIBT/17/4291 C	Ambient Air	PM 10 (ug/m ³)	183	150
5	QTS/PIBT/17/4423	Noise Level Reading	Outside Power House	97	75dB(A)
6	QTS/PIBT/17/4736	Noise Level Reading	Inside Power House	102	75dB(A)
7	QTS/PIBT/19/6108 dated 29-02-2019	Noise Level Reading	Inside Power House	103	75dB(A)
8	QTS/PIBT/19/6278 dated 08-03-2019	Noise Level Reading	Inside Power House	107.3	75dB(A)
9	QTS/PIBT/19/6425 dated 02-04-2019	Noise Level Reading	Inside Power House	101	75dB(A)

Marine pollution due to excessive chemicals in sea water

Annex-E: Statements showing the lab test results of BoD, COD as compared to NEQS limits (Para No.4.2.6)

Test Results for the Month	Parameters to be analyzed	NEQS	Units	Results
Sep 2015	Biochemical Oxygen Demand (BOD) ₅	80	mg/L	137
	Chemical Oxygen Demand (COD)	150	mg/L	275
	Oil & Grease	10	mg/L	21.4
Oct 2015	Biochemical Oxygen Demand (BOD) ₅	80	mg/L	148
	Chemical Oxygen Demand (COD)	150	mg/L	309
	Oil & Grease	10	mg/L	43.6
Nov 2015	Chemical Oxygen Demand (COD)	150	mg/L	156

Air pollution caused by NO & CO emission against NEQS Standards

Annex-F: Statements showing the results of NO &CO emission as compared to NEQS limits

(Para No.4.2.11)

Date	Time	NO (ug/m³)	CO (ug/m³)
NEQS Limit		40	5
30-06-2015	10:00	51	61.2
30-06-2015	11:00	47	65.4
30-06-2015	12:00	41	67.5
30-06-2015	13:00	43	73.9
30-06-2015	14:00	41	63.3
30-06-2015	15:00	51	73.9
30-06-2015	16:00	47	67.5
30-06-2015	17:00	41	61.2
30-06-2015	18:00	43	44.3
30-06-2015	19:00	51	38.0
30-06-2015	20:00	47	29.5
30-06-2015	21:00	41	27.4
30-06-2015	22:00	43	21.1
30-06-2015	23:00	41	25.3
01-07-2015	0:00	51	21.1
01-07-2015	1:00	47	23.2
01-07-2015	2:00	41	19.0
01-07-2015	3:00	43	16.9
01-07-2015	4:00	45	19.0
01-07-2015	5:00	47	16.9
01-07-2015	6:00	41	25.3
01-07-2015	7:00	49	35.9
01-07-2015	8:00	45	42.2
01-07-2015	9:00	51	50.6

Annex-G: Statement of non-production of record by the management of PQA

(Para No.4.3.1)

Requisition No.	S.No	Description
1	1	Master Plan (original and revised Gazetted copy as approved by the Federal Government)
	15	Environmental Management Plan.
	16	Environmental Impact Assessment Reports. (Berth 3 & 4, PQ Coal-Fired Power Project)
3	2	Copy of Quantitative Risk Assessment (QRA) (Berth 3 & 4, PQ Coal-Fired Power Project)
5	2	Copy of Environmental Audit of Independent Monitoring Consultant of Port Qasim Coal-fired Power Project 2 X 660 MW at Bin Qasim, Karachi
	3	Copies of Compliance Reports of EIA/IEE Regulation of Port Qasim Coal-fired Power Project 2 X 660 MW at Bin Qasim, Karachi,
	4	Copies of Reports based on Ash Quality, Ash Handling, Ash disposal and monitoring as the obligation under the approval granted by Environmental Protection Agency, Government of Sindh Reference No:EPA/2014/8/29/EIA/17.
	5	Copy of detailed study to foresee impacts of dredging and land reclamation on the coastline as submitted by Port Qasim Coal-fired Power Project 2 X 660 MW at Bin Qasim, Karachi, M/s. EETPL
	6	Copies of Implementation Reports of all the mitigation measures and Environmental Management and Monitoring Plan (EMMP) laid down in the EIA Reports as submitted by Port Qasim Coal-fired Power Project 2 X 660 MW at Bin Qasim, Karachi, M/s. EETPL and M/s. PGPL LNG Terminal to Environmental Protection Agency, Government of Sind.
6	1	Copies of Quarterly and annually Monitoring Reports in respect of Port Qasim Coal-fired Power Project 2 X 660 MW at Bin Qasim, Karachi, M/s. EETPL and M/s. GPL LNG Terminal.
	2	of Environmental Audit of Independent Monitoring Consultant of Port Qasim Coal-fired Power Project 2 X 660 MW at Bin Qasim, Karachi,
8	1	Detail regarding the laboratory reports/analysis of dredged material in respect of LNG and Coal Terminals
	2	Details regarding the cases reported of discharging and dumping of waste material by the vessels / carriers arrived at LNG and Coal Terminals.
	3	Challan Books of Marine Pollution Control Centre in respect of Inspection of Vessels/carriers arrived at LNG and Coal Terminals
10	All	CSR (Corporate Social Responsibility) policy of Port Qasim Authority regarding impact on society and environment. CSR (Corporate Social Responsibility) policy of LNG and Coal Terminals regarding impact on society and environment. Detail of funds allocated under CSR by Terminals and PQA. Detail of schemes/projects planned and executed from the operation of terminals under the CSR.
15	5	Details regarding the Total length of Fence, Start date of work as approved in Master plan, how much length of Fence constructed with Actual Start date of work. (PIBT & PQEPCL)
	7,8	7.Copies of Independent Management Consultants (IMC) Audit Reports of PIBT. 8.Third party Inspection Report in respect of the following as per SPEQ Standards. (PIBT) Ambient Air Quality Testing.

		Ambient Noise Level Monitoring Air Emissions
17		Copy of Study to foresee impacts of dredging and land reclamation on the coastline submitted to Sindh EPA by LNG and Coal Terminals. Copies of Reports on Ash Quality, Ash Handling, Ash disposal and monitoring as submitted to Sindh EPA by Coal Terminals. Details regarding the installation of Pollution Abatement Devices (PAD) at LNG and Coal Terminals along with monitoring Reports.
18	1	Copy of Project Guidelines regarding the LNG and Coal Terminals at PQA, Karachi.
19	1 to 7	Complete Project /case file of PIBT Complete Project /case file of Dedicated coal terminal by converting existing Marginal Wharf Berth No. 3 & 4 Reference SEPA letter No. EPA/2016/8/8/EIA/81/2018/559/18 dated 27-06-2018 Para No.5 (viii) The project sponsors will communicate to Pakistan Railways for conducting environmental assessment for transportation of coal from terminal to Sahiwal Power Plant via railways. Provide the Copy of environmental assessment for transportation of coal from terminal to Sahiwal Power Plant via railways. Reference SEPA letter No. EPA/2016/8/8/EIA/81/2018/559/18 dated 27-06-2018 Para No.5 (x). provide the complete details regarding the losses during loading from the ship and transportation to Sahiwal via railways from May 2017 to February 2020. Reference SEPA letter No. EPA/2016/8/8/EIA/81/2018/559/18 dated 27-06-2018 Para No.5 (xvi) details regarding the SOx emission control system and NOx burners were installed or not. Reference SEPA letter No. EPA/2016/8/8/EIA/81/2018/559/18 dated 27-06-2018 Para No.5 (xxv) Provide the monthly environmental monitoring reports produced by the IMC. Reference SEPA letter No. EPA/2016/8/8/EIA/81/2018/559/18 dated 27-06-2018 Para No.10. Provide Implementation Report of all mitigation measures and EMP laid down in the EIA Report.
20		PQA's Contingency Plan PQA's Safety & Security Criteria for establishment of LNG Terminal. Copy of SIGTTO standards regarding the optimum and safe location for the LNG Terminal.
21	1	Details regarding the correspondence /directives/instruction received from Ministry/ Govt. of Pakistan to PQA regarding the area designated for the LNG Terminals etc.
22	1,2	Copy of SOPs/Policy of the Environment & Safety Department. Copy of PQA Environment Policy.
23	1,2	Complete personal file of D.G. of Environment & Safety Department. Details regarding the studies/survey to ascertaining whether the Terminal/project is likely to result in significant irreversible impacts to essential parameters of ecological integrity; and to ensure optimal planning and execution of any habitat restoration and offset designed to mitigate Terminal/project impacts. Further, the project will not result in inadequately mitigated direct or indirect impacts to a species or habitats with special conservation status conducted by the Environment & Safety Department.