



ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (ESMP) PART 2: OPERATIONS

Port Reception Facility – used oil storage and recycling
Freeport, Grand Bahama

CLEAN MARINE GROUP – JULY 2021
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List of Abbreviations

ATEX	Potentially Explosive Atmospheres
BEST	Bahamas Environment, Science & Technology
BMP	Best Management Practices
COD	Chemical Oxygen Demand
CMG	Clean Marine Group
DEHS	Department of Environmental Health Services
DEPP	Department of Environmental Planning and Protection
EIA	Environmental Impact Assessment
EH&S	Environmental, Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FHC	Freeport Harbour Company
GBUC	Grand Bahama Utility Company
GBPA	Grand Bahama Port Authority
GDP	Gross Domestic Product
GIIP	Good International Industry Practice
HASP	Health and Safety Plan
HDI	Human Development Index
HMI	Human-Machine Interface
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IMR	Infant Mortality Rate
MOE	Ministry of Environment
MARPOL	International Maritime Organisation (IMO) Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 and the Protocol of 1997
MCC	Motor Control Centre
MLW	Mean Low Water
NEMA	National Emergency Management Agency
NOx	Nitrous Oxides
PCB	Polychlorinated biphenyls
PRF	Port Reception Facility
PFD	Process Flow Diagram
PID	Process and Instrument Diagram
PLC	Process Logic Controller
PPE	Personal Protective Equipment
PPM	Parts Per Million
PS	Performance Standards
SCADA	Supervisory Control and Data Acquisition

SGW	Ship Generated Waste
SIA	Social Impact Assessment
SOP	Standard Operating Procedure
TOC	Total Organic Carbon
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
VOC	Volatile Organic Compounds
WBG	World Bank Group
WHO	World Health Organisation
WRMU	Water Resources Management Unit

1.0 ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN INTRODUCTION

1.1 INTRODUCTION & SCOPE OF ESMP

The Clean Marine Group (CMG) Environmental & Social Management Plan (ESMP) is designed to manage environmental and social risks and impacts during the construction of the MARPOL Port Reception Facility (**Part 1**), and as an operating system to manage ongoing risks and impacts once the facility has been commissioned and placed into service (**Part 2**). It is informed by and utilizes the findings of the independent Environmental and Social Impact Assessment (ESIA), dated June 2021 as its input to establish and meet environmental, economic and social requirements. Part 1 of the ESMP identifies and manages the environmental, social, occupational, and communications processes leading up to and during the construction phase of the project. The construction phase, in this context, is inclusive of the final facility design, procurement, fabrication and construction of the various components of the project. It also includes the on-site installation of utilities, grading operations, delivery and storage of system components, erection, commissioning and prove-out of all facilities as well as the establishment of all final site improvements. The final phase of the construction process includes the commissioning of all systems, prove-out, and punch list completion for final turnover to operations. **Part 2** of the ESMP (**this document**) identifies the ongoing operational and decommissioning impacts associated with the Facility.

The primary objective of the environmental management and monitoring described in this ESMP is to record environmental impacts resulting from the project activities and to ensure implementation of the mitigation measures in order to reduce adverse impacts and enhance positive impacts from specific project activities. It is also meant to address any unexpected or unforeseen environmental impacts that may arise during construction of the project. The ESMP enforces the following IFC Performance Standards (PS):

PS 1: Assessment and Management of Environmental and Social Risks and Impacts

PS 2: Labour and Working Conditions

PS 3: Resource Efficiency and Pollution Prevention

PS 4: Community Health, Safety and Security

PS 6: Biodiversity Conservation and Sustainable Management of Living Resources

This document is intended to be utilized by all site contractors, vendors, decommissioning agents, and operators (including Clean Marine Group) during the operations phase as an over-arching guide that establishes minimum standards for project performance. The precedence for governance is as follows:

- The regulations of The Bahamas shall be adhered to at all times and shall establish the minimum basic requirements to be maintained and complied with.
- International and national building codes and best practices for operations, as referenced in the various project documents including the ISO standards, IFC standards, IMO standards

and specifications, and good international industry practices (GIIP), along with the project specific integrated management system (IMS) and all relevant manufacturer specific operational procedures and requirements, shall constitute the contractual obligations of the parties participating in this project.

- This ESMP shall be followed above and beyond the previous two regulatory and contractual obligations and shall be the minimum standards used to establish project compliance for all permits, approvals, funding mechanisms and recitations by the project proponents.

1.1.1 Structure of ESMP (Part 2)

This report provides the general provisions and context in Section 1, including a discussion of the transition from the construction phase to the operations phase along with the general environmental and social aspects and impacts identified in the ESIA, relevant regulatory requirements, overall roles and responsibilities, and relevant CMG corporate policies. Section 2 provides the general standards for operations related occupational safety and health (OSH) and Section 3 provides the general operations description for the PRF. Specific operations phase environmental and social impacts are identified in Sections 4-12. Each section starts with a brief description of the impact, followed by a description of the mitigation strategies to be deployed to negate or minimize the impact, followed by the monitoring/reporting requirements, specific training required (if relevant), other resources, documentation to demonstrate compliance and the roles and responsibilities. The final section (13) provides a summary of mitigation measures, references and responsibilities for the execution of these requirements.

The ESMP defines how it will be used, sets out procedures, and responsibilities associated with its implementation. It is a “living document” which is subject to revision throughout the life of the operations phase of the project. As details for the project are finalized a revised final edition of this ESMP will be submitted to the GBPA and project sponsors for approval.

1.2 CMG ESG POLICY

CMG's Senior Management Team will develop an Environmental and Social Governance (ESG) Policy statement. This policy will be the framework by which environmental, social and governance objectives and targets are set. This policy will be communicated to all Employees, Contractors, and Subcontractors via site induction training, the employee handbook, annual training, the corporate website, social media sites maintained by the company, and hard copy displays at the Facility. This policy is over-arching and incorporates by references the specific IMS standards developed by CMG. This policy will also be evaluated and updated by senior corporate leadership as warranted by site conditions, through the ongoing stakeholder engagement process and as new opportunities for improvements are identified.

1.3 PROJECT DESCRIPTION & IMPACT SUMMARY

1.3.1 Background

This Environmental and Social Management Plan (ESMP) is being submitted by The Clean Marine Group Limited (CMG) to the Grand Bahama Port Authority (GBPA) and the Department of Environmental Planning and Protection (DEPP) pursuant to the GBPA's request for an Environmental and Social Impact Assessment (ESIA) and Environmental Management Plan (EMP) in respect of CMG's proposed MARPOL Port Reception Facility, that will be constructed in Freeport, Grand Bahama Island. The ESIA and ESMP is for Phase I of the project. Phase I includes the landward development and operations, whereas Phase II will include additional bulk liquid transfers such as, ship to ship transfer and ship to shore transfer. Phase II assessments will be completed as required prior to project initiation.

The proposed site location for the CMG Facility is on the western side of Freeport Harbour on Parcel 2 of Basin 3 (Figures 2 and 3). The site more specifically is to the west of the Freeport Container Port offices and encompasses 4.12 acres. The zoning is heavy industry by the Grand Bahama Port Authority's Freeport Land Use Masterplan and the proposed project is consistent with the current zoning designation.

The MARPOL Facility will be the first of its kind in the Bahamas. The Facility will be engineered, procured, constructed, and operated under the terms of a contract between CMG and a contractor following the conclusion of the procurement and bid review process. CMG was established in 2012 to assist the Commonwealth of The Bahamas in complying with its international obligations to operate a Port Reception Facility (PRF) under the International Maritime Organisation's (IMO) MARPOL Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978, relating thereto and as further amended by the Protocol of 1997 (MARPOL), to which the Commonwealth of The Bahamas is a signatory. The principal aim of the Facility will be to collect and process liquid waste typically generated by the normal operation of ships. The wastes will be comprised of mainly waste oils and oily water mixtures, off-specification fuels, bilge water, and, in the case of oil tankers, crude oil tank washings. The Facility will later look to expand taking other types of liquid waste under the terms of the MARPOL Convention, and from the Islands generally, as and when circumstances will allow. Expansion of services to other liquid waste are not addressed in this report.

The CMG reception and treatment Facility will be an estimated \$15M+/- capital investment in Freeport in support of the maritime industry, local companies, and the community. The plant will be operated by trained Bahamians and specialist contractors as required. The plant is expected to employ 5 or 6 operators, laboratory staff, environmental and health and safety supervisors, truck drivers, tanker crew, administration and management staff totaling up to 19 full-time and part-time employees (excluding the construction phase) and will create indirect jobs resulting from local service contracts during the operations phase.

The CMG Facility will be a support service for handling and treating oily water and used oil. CMG will provide aid to other local companies in the safe and responsible handling and treatment of liquid

waste streams. Currently, the collection, storage, and disposal of used oil are a challenge in the Bahamas and Grand Bahama Island. The CMG Facility will aid in addressing this issue. Figure 1 is an aerial view of the Freeport Harbour. Figure 2 is an aerial view of the project location and boundary. Figure 3 is a proposed concept layout of the new facility.

The following section of this document provide a general description of the operational components for the Facility.



Figure 1: Aerial view of Freeport Harbour



Figure 2: Aerial view of Basin 3 project location is highlighted in red shade

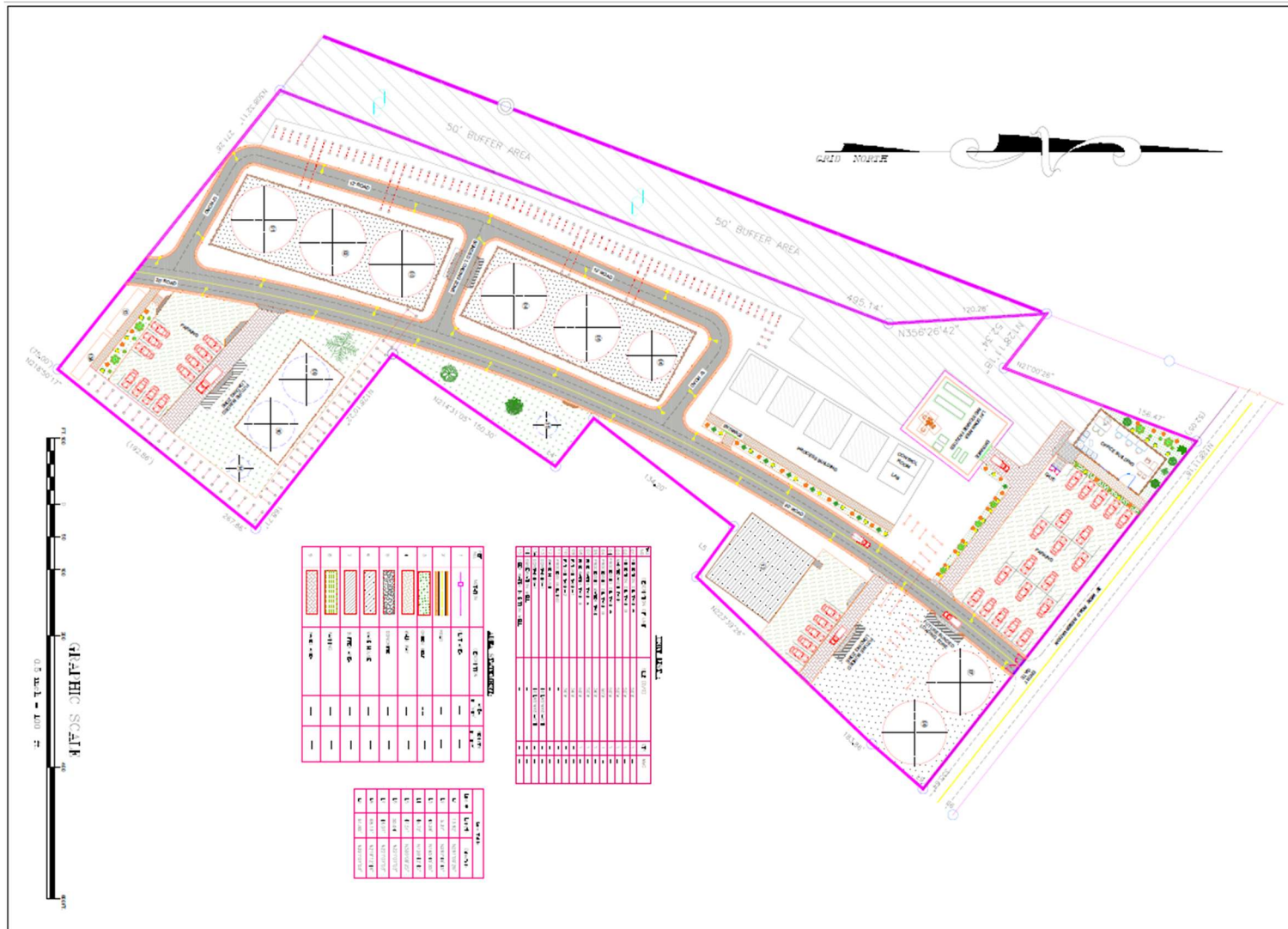


Figure 3: Conceptual PRF layout

1.3.2 Waste Processing Description

The reception of the ship generated wastes/residues at the Facility will be followed by their treatment. The prime objective of a treatment technology for oily wastes/residues is to remove oil from water and sediments in order to produce an oil stream that is suitable for reuse or recycling. The technology to be deployed to accomplish the treatment is well accepted in the industry with supporting efficiency data. The second objective is to generate an aqueous effluent that meets the effluent discharge standards of the WBG General EHS Guidelines limits for effluent. To achieve the effluent discharge standard, several treatment steps will be required. In general, the treatment process is categorised as follows:

- primary treatment (Gravity separation);
- secondary treatment (physical/chemical separation); and
- tertiary treatment (biological/chemical treatment).

The Oil Treatment logistics can be divided into seven components:

- Reception Tanks – storage for the reception of wastes from road tankers and barges. Capable of holding 24 hrs. worth of waste. This waste may be agitated at times and heated.
- Transfer Pumps – Pumps to transfer wastewater to treatment tanks. This is a heated tank with recirculated hot water.
- Treatment Tanks – Used to homogenize the incoming wastewater to present a steady and balanced feed to the Tricanter
- Tricanter Feed Pumps – Transfer heated feed from the treatment tanks to the Tricanter at a controlled rate.
- Tricanter – Used to separate the incoming waste into three separate phases: oil, water and solids.
- Separators – To clarify and dry the oil for re-use. Operates at 90 – 95°C.
- Oil Storage Tank – For storage of the finished product.

A process flow diagram (PFD) that graphically describes the flow of materials through these components is provided in Appendix D. The maximum treatment capacity of the plant will be 20,000 litres per hour (5,283 gallons/hr.) and the Facility will be capable of operating 24 hours per day, 7 days per week, equating to approximately a maximum of 150,000 metric tonnes of waste processing capacity per annum allowing for maintenance downtime. There will be two treatment trains with equal capacity. The proposed treatment methodology is consistent with other current operations deployed by similar operations on other countries including the UK. Most elements of the Processing plant will be constructed off-site by the selected vendor and shipped to site in modules that will be located and

fixed in place. The tank storage Facility, civil works and interconnecting pipework will be constructed locally under the guidance of CSG.

1.3.3 Wastewater Disposal

Due to the Freeport Harbour Rules, discharges are not generally permitted into Freeport Harbour. Therefore, it is proposed that the treated wastewater will be discharged to a six hundred foot deep well to be drilled on site. Treated wastewater from plant processing of oily waste and bilge water will be treated per the EHS Guidelines emissions limits. There are currently two other 600 ft wells in Grand Bahama for the disposal of treated wastewater. They are at the Grand Bahama Shipyard and the other at Polymers International Ltd.

1.3.4 Surface Water Discharges

Surface water discharges that have the potential for contamination are not allowed into the adjacent harbour. All surface runoff that is within bunded areas and may come into contact with oily residues will be directed to the onsite treatment facilities for processing. Treated runoff water will be discharged through the onsite deep well disposal system. Overland runoff from normal precipitation that does not come into contact with oily contaminants will be treated through the stormwater management system for conveyance to the nearest storm drains.

1.3.5 Solid Waste Management

Solid waste will be managed through the municipal service provided by Sanitation Services Ltd. for garbage collection and disposal at the Pine Ridge Landfill. During operations solid waste will be generated by two waste streams. Domestic waste, including typical office waste from paper, cardboard, aluminum, plastic, glass, etc., will be segregated and recycled to the extent practicable based on the Facility's recycling program with appropriately labeled bins and off-site disposal. Non-recyclable waste will be collected on site and sent to the local landfill (Pine Ridge). Both recycled and non-recycled solid waste will be transported by an independent licensed carrier (Sanitation Services Ltd).

Industrial solid waste represents the second waste stream. This includes the final processed sludge, spent carbon filters from the process tanks, and laboratory waste from the onsite lab (some of which may be classified as hazardous waste). Sludge from the treatment process will have to be sampled and characterized as per the Sanitation Services Special Waste Profile Sheet. Sanitation Services also requires testing for Toxicity Characteristic and Leaching Procedure (TCLP) to be submitted before acceptance of the waste. TCLP is a solids sample extraction method for chemical analysis employed as an analytical method to simulate leaching through a landfill. CMG will submit the waste sludge for TCLP testing as per the Sanitation Services protocol. The testing methodology is used to determine if a waste is characteristically hazardous (as used by the United States Environmental Protection Agency). Any sludge that fails the TCLP will be treated as a hazardous waste and shipped by manifest by a licensed hauler for disposal. This is not anticipated based on similar case studies.

CMG has also developed a patented process, in respect of which CMG has the license and the experience, to treat the produced sludge. Immobilisation combines the sludge with a limestone/soil mix that can be excavated locally. The combined material is then passed through a crusher to homogenise the material to the optimum size prior to being passed through calibrated weighing hoppers where, if deemed necessary according to the specific qualities of the sludge, common Portland cement is added as an additional bonding agent. Once any bonding agent is added, it is then weighed again and its pH value is tested before being introduced through a screw type mixer where a calculated quantity of both inert sodium silicate and fresh water is added into the mixing process. This treatment then produces a hard and inert glassy substance whereby all and any elutable pollutants are locked in for several thousand years. The material produced resembles a fine gravel that once complete and tested on site, will meet Florida EPA Standard 62-777 FAC. This material then becomes a valuable resource for capping disused landfill cells, road building and/or constructing soundproofing barriers at, for example, airports. This method of solid waste management is the preferred option as it has the opportunity to create a value-added product stream. Disposal at the local landfill will only be used as a back-up method.

Carbon filters will be used to treat noxious fumes generated at various heated storage tanks. These filters will eventually become loaded (spent) and will need to be disposed. The current planned vendor will receive spent carbon filters for recycling and/or disposal at their facility in the United States. If this is not available, then Sanitation Services will receive them for disposal at the Pine Ridge Landfill.

Solid laboratory waste is expected to be in minimal quantities and will likely be assimilated with the final sludge. No laboratory spent chemical waste, reagents or other potentially toxic substances will be disposed into the ground or sanitary sewer.

Domestic sewage will be disposed of onsite using an in-ground septic system. This system will utilize a buried septic tank (1,000-1,500 gallon tank size is estimated), and a trench-type leachfield that allows the liquid wastewater to be infiltrated into the existing soils. These systems are typical in the region and used successfully where there are no concerns for groundwater contamination. There are no domestic wells located in this vicinity and the soils have been determined to be suitable for this application. The proposed system will require prior approval from GBPA.

All wastes generated on-site will be disposed of in an environmentally responsible manner.

1.4 SUMMARY OF IMPACTS FROM OPERATIONS

The ESIA analyzed potential negative and positive impacts as a result of the Project. A total of five potentially negative environmental impacts were assessed, four of which have an overall impact rating of Medium and one is Low (excluding the construction phase). These ratings are indicative of a project that is sustainably designed and well situated for its intended use. The Facility is utilizing available land at the existing port that has been previously disturbed which represents the least damaging alternative for this project as opposed to constructing a Facility at a greenfield site which would likely require substantial dredging and terrestrial impacts. The remaining potentially negative

environmental impacts relate to the potential air and water emissions related to Operations. Mitigation measures for these are provided (and described in more detail below). Groundwater discharges will occur via the proposed deep well injection and these are rated as Medium impact. Surface water discharges as a result of runoff, and/or from a catastrophic event are both rated as a Medium environmental impact. Solid waste management is rated as a Medium impact. Air emissions from the onsite diesel generator, truck/equipment exhaust and fugitive emissions will be mitigated but represent a Medium impact. Noise is rated as a Low impact. Potential negative social outcomes as a result of the proposed development include two potential impacts. The potential for increased traffic is rated at a Medium impact and the potential for visual impact is rated at Low. Both of these impacts are consistent with the nature of the proposed development and are generally mitigated by the scale of the project and its location relative to other land uses. Traffic management is part of the ESMP document.

Two generalized positive socio-economic impacts are the result of the capital investment into the local economy along with concomitant job creation, and a reduction in improper oil disposal in the Bahamas. The reduction in the improper disposal of oil is both a positive environmental and social impact which will benefit the region through institutional change with regards to used oil disposal. It is not quantifiable but is rated as a Medium environmental and High social positive impact. The socio-economic impact from capital investment is important but also minimized by the fact that the equipment will be purchased and assembled overseas thus minimizing the direct impact that could be gained by local purchase. However, it is unlikely that local suppliers have the capabilities to produce this very specialized equipment and thus this is likely an unavoidable outcome. This impact is also further reduced by the current tax incentives offered by The Bahamas. However, job creation is a major positive socio-economic impact from operations and these impacts will be continuous throughout the life-cycle of the Project. The overall positive impact rating is considered High.

The construction phase of the project is considered a short term Low adverse impact. Social impacts because of construction will be managed by proper security, safety and health protocols and oversight. Positive benefits of the construction will include increased employment and a reliance to the extent practicable upon local hiring preferences for workers and local suppliers. These requirements are more fully described in Part 1 of the ESMP.

1.5 DECOMMISSIONING

Environmental and social impacts during decommissioning of the Project, including infrastructure, have not been assessed due to the long life-cycle of the Facility. Additionally, a number of options will likely be available to future users of the project or the site if decommissioning is required. These options will largely drive the type and level of decommissioning required. Regardless, if the plant is to be decommissioned, the Project Owner will be required by GBPA to dismantle any standing structures and provide the site back to a re-usable condition, free of any hazards or contamination.

The recommended decommissioning process will unfold in three key phases as follows:

- Pre-decommissioning activities: includes the detailed planning (development

of a Decommissioning Plan, Site Closure and Restoration Plan) and identification of permit and approval requirements;

- Decommissioning activities: removal of all infrastructure (including piping, cables, pylons, footers and erections for the connection to the existing utilities). Machinery, steel and dismantled materials will be recycled where possible and disposed of at licensed disposal sites with any hazardous substances properly contained and managed according to regulatory authority directives; and.
- Post-decommissioning activities: site stabilization, perimeter security (if required), final surveys, close-out reports and field monitoring as necessary.

During decommissioning, the mitigation and monitoring requirements detailed in the Construction ESMP regarding requirements to meet applicable performance standards and the engagement with stakeholders will be addressed in the incorporated in the Decommissioning Plan. As the development process of the site is yet to fully begin, detailed decommissioning plans have not yet been formulated; however, the initial plant life will be designed for a minimum of 25 years. Upgrades during the life of the plant can increase the design life to 50 or more years. A Decommissioning Plan will only be developed during the latter stages of the production life of the Facility. The assessment of the significance of the environmental and social impacts associated with decommissioning will need to be conducted by the ESMP Management Unit once the Decommissioning Plan is finalized. In general, the level of impacts and risk posed by decommissioning activities will be commensurate with those during the construction phase and the standard mitigation measures outlined should be sufficient.

1.6 ENVIRONMENTAL ASPECTS AND IMPACTS

CMG has completed an environmental and social risk assessment during the creation of this ESMP. All known and predictable risks have been identified, impacts defined, and appropriate mitigation measures outlined with a risk register to minimize identified impacts. The assessment addresses both potential temporary impacts that may occur during the construction period and any permanent impacts that may be sustained from ongoing operations. The risk assessment is recorded as the CMG Risk Register and contained in Appendix A. The project level Environmental and Social Impact Analysis (ESIA) has also informed this ESMP through the identification of environmental and social risks (both before and after recommended mitigation measures).

This ESMP addresses specific environmental, and occupational health and safety issues and provides specific details on how these will be mitigated, monitored and managed during the duration of the project once commissioned. The review of the project environmental aspects and impacts is an ongoing process throughout the project's activities.

The list of potential operations phase environmental, health, and social aspects identified as per the ESIA findings include:

- Air Emissions/Air Quality

- Surface water discharges
- Groundwater discharges
- Solid waste management
- Noise
- Operations traffic
- Worker safety
- Community safety
- Visual impacts
- Increased job creation and economic investment (positive impact)

These environmental, health and social aspects guide the development of this ESMP but additional measures are addressed as needed to provide for a sustainable and equitable project that reduces negative environmental and social impacts, is protective of workers and the community and emphasizes positive impacts to the extent practicable.

1.7 ENVIRONMENTAL LEGISLATION, REGULATION AND GUIDELINES

CMG will fully comply with The Bahamas Government, and local authorities, such as: The Department of Environmental Health Services (DEHS), the Department of Environmental Planning and Protection (DEPP) and the Grand Bahama Port Authority (GBPA). The environmental standards and regulations set by these organizations shall be considered at all phases of the execution, such as design, engineering, procurement, construction, testing, maintenance and commissioning.

CMG also intends to adopt other Best Practices and Standards, including those established by the United Nations Environment Program (UNEP), to ensure that the company adheres to, and maintains a global standard for environmental management of its facility.

CMG will maintain a regulatory register that will identify legal requirements, standards, and parameters. Management will ensure compliance, and adherence to specified parameters through periodic review of this register. The following related Bahamas regulations have applicability to this project.

Environmental Health Services Act 1987

This Act promotes conservation and maintenance of the environment and also addresses the control of contaminants and pollutants that may adversely affect the environment and human health. The Act also outlines regulations with respect to water supplies, solid and liquid waste, beaches, seaports, harbours, and marinas.

Environmental Health Services (Collection and Disposal of Waste) Regulations 2004

These regulations provide for the collection and disposal of domestic, commercial and construction waste. Commercial waste includes ashes, refuse and rubbish. Construction waste includes any waste materials from construction, renovation, repairs and demolition.

Environmental Planning and Protection Act 2019

This Act provides a legal framework for the protection, enhancement and conservation of the environment. It also provides for the prevention and mitigation of pollution in order to maintain the quality of the environment. It establishes the Department of Environmental Planning and Protection (DEPP) to regulate and oversee the review of Environmental Impact Assessments and Environmental Management Plans.

Health and Safety at Work Act 2002

The Act provides for:

- Securing the health, safety and welfare of persons at work;
- Protecting persons other than persons at work against risks to health or safety arising out of the activities of persons at work; and
- Controlling the keeping and use of explosive, highly flammable or other dangerous substances and preventing the unlawful acquisition, possession and use of such substances.

Water and Sewerage Corporation Act 1976

This Act establishes the Corporation. Functions of this organization include the application of appropriate standards and techniques for investigation, use, control, protection, management and administration of water. The Corporation is also mandated to oversee waste disposal, water treatment and water quality.

Freeport Harbour Company (FHC)

As the landlord for the leased property to CMG and administrator for the Harbour, the FHC has the right to inspect, audit, and make recommendations to CMG to ensure the CMG operation does not adversely impact upon the environment and public health. Furthermore, as administrator for the Harbour, the FHC can make rules and regulations that it deems necessary for the administration and operation of the Harbour. The GBPA environmental department has asked for approval from the FHC as part of the permitting process for the Project.

Chapter 30 Freeport, Grand Bahama

It is noted that the GBPA, in exchange for specific tax concessions, was mandated under the Freeport, Grand Bahama Act, 1993, Statue Laws of the Bahamas 2000, Chapter 30 under Schedule (Clause 1) Works and Undertaking, Item 9- to “Promote home porting and container port Facility at Freeport Harbour”.

The GBPA under the Freeport Bye-laws Act

Under this Act, the GBPA is allowed to make and enforce bylaws for the purpose of maintaining proper standards of building, construction, sanitation and hygiene within the area of Grand Bahama Island known as the Port Area and other purposes connected with the orderly development of said area.

Additional international standards also apply to the Port Reception Facility (PRF) project. These include the following.

World Bank Environmental, Health and Safety (EHS) Guidelines

These are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The EHS Guidelines contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at a reasonable cost. CMG's application of the EHS Guidelines will be tailored to the mitigation of hazards and risks established for the project in which site-specific variables, such as area, assimilative capacity of the environment, and other project factors, are taken into account.

International Finance Corporation (IFC) Performance Standards (PS)

The IFC Performance Standards provide guidance on how to identify, avoid, mitigate, and manage environmental and socioeconomic risks and impacts of complex projects. There are eight Performance Standards, of which, five are identified as applicable to this project (see Section 1.1).

International Labour Organization (ILO) Core Labour Standards

The ILO has identified eight "fundamental" Conventions cover the principles and rights at work. These are listed below and incorporated by reference to this ESMP (Parts 1 and 2). These principles, along with the relevant legislation of The Bahamas, will guide the relationship and requirements for employment at the PRF and will be flowed down to all subcontractors and vendors. These eight core principles are:

1. Freedom of Association and Protection of the Right to Organise Convention. 1948 (No. 87);
2. Right to Organise and Collective Bargaining Convention, 1949 (No. 98);
3. Forced Labour Convention, 1930 (No. 29) and its 2014 Protocol;
4. Abolition of Forced Labour Convention, 1957 (No. 105);
5. Minimum Age Convention, 1973 (No. 138);
6. Worst Forms of Child Labour Convention, 1999 (No. 182);
7. Equal Remuneration Convention, 1951 (No. 100); and,
8. Discrimination (Employment and Occupation) Convention, 1958 (No. 111).

Basel Convention

The Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal was adopted on 22 March 1989 in response to a public outcry following the discovery, in the 1980s, in Africa and other parts of the developing world of deposits of toxic wastes imported from more developed countries. Amongst other provisions, the Basel Convention requires a receiving country to provide “informed consent”, as defined in the relevant language. The Bahamas is a signatory to the Basel Convention (1992) and these provisions will be flowed down to CMG and their subcontractors.

International Maritime Organisation's (IMO) Oil Pollution Preparedness, Response and Cooperation (OPRC) Convention

Parties to the International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) are required to establish measures for dealing with pollution incidents, either nationally or in co-operation with other countries. Bahamas is a signatory to this Convention.

ISO Standards and Certifications

- ISO 14001 Environmental Management System;
- ISO 45001 Occupational Health and Safety Management Systems; and
- ISO 9001 Quality Management Systems.

Additional international standards to be implemented specifically for the PRF include:

- International Labour Organization (ILO) Code of Practice for Safety and Health in Ports (2005);
- General Conference of the International ILO Convention concerning Occupational Safety and Health in Dock Work, C-152, (1979);
- General Conference of the ILO Recommendation concerning Occupational Safety and Health in Dock Work, R-160;
- International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk (IBC Code);
- International Maritime Organisation's MEPC.1/Circ.834/Rev.1 Consolidated Guidance for Port Reception Facility Providers and Users
- The Revised Recommendations on the Safe Transport of Dangerous Goods and Related Activities in Port Areas;
- International Safety Guide for Oil Tankers and Terminals ISGOTT (5th Edition); published by the International Chamber of Shipping, the Oil Companies International Marine Forum and The International Association of Ports and Harbours.
- Guidelines on Port Safety and Environmental Control, published by The International Association of Ports and Harbours

- Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code); and
- International Maritime Dangerous Goods Code (IMDG Code).

Additional recommended references are provided in the detailed sections below for specific objectives. These are provided review and application as appropriate and will be utilized to guide operational practices and policies.

1.8 ROLES AND RESPONSIBILITIES

Every employee, regardless of their role, is responsible for compliance of Safety, Health and Environmental matters under their control. CMG will identify key personnel involved with ensuring the proper implementation of the ESMP. Roles and responsibilities related to the ESMP will be clearly defined and communicated. Documents such as environmental organizational flowcharts will be designed for ease of reference to proper reporting structure. These are defined in greater detail and specific to the environmental/occupational risk identified. Primary responsibility for site compliance will rest with the General Manager (GM). Figure 4 is a draft Operational Organizational Structure for the Facility. This chart identifies the employee designations and reporting hierarchy. Figure 5 is an organogram for CMG.

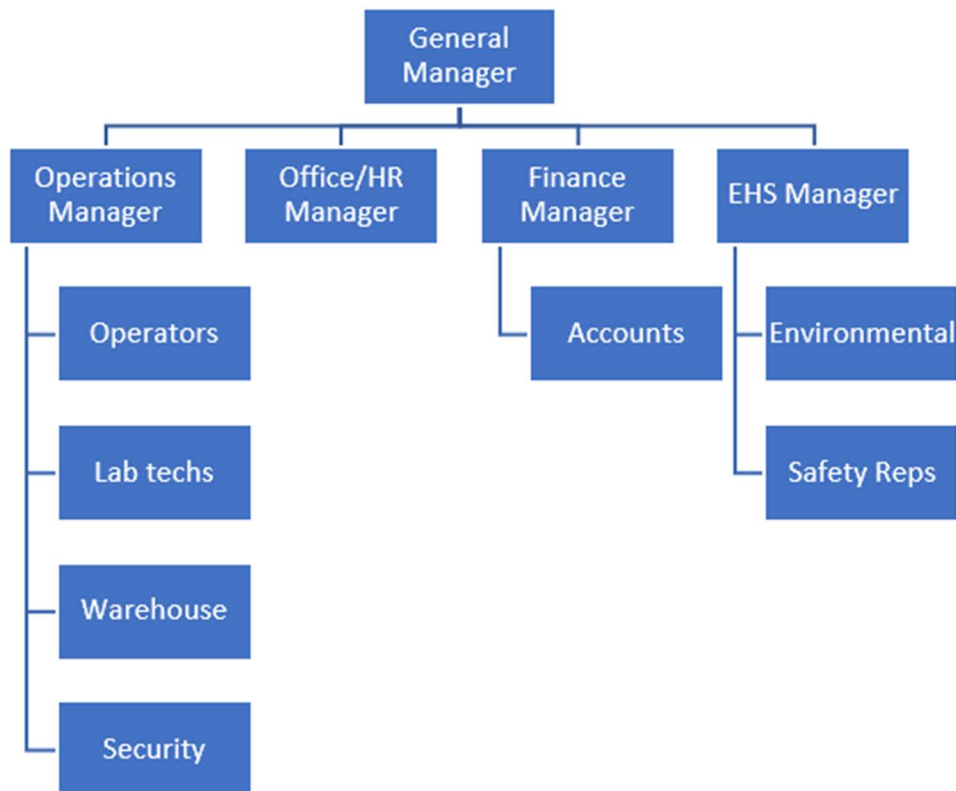


Figure 4: Facility Organizational Structure

Proposed Structure



Figure 5: CMG Board Structure

1.9 TRAINING AND AWARENESS

CMG will ensure that all the personnel whose activity can cause a significant impact on the environment and/or health and safety must have acquired the necessary competencies by training and appropriate documented experiences. CMG will verify, by interviews or appraisal of the experiences, that the personnel and vendors/contractors possess the suitable competence to carry out their own task in the respect of the environment. All subcontractor and vendors must provide adequate training to the personnel that can cause a significant environmental impact and record the training activities. During the operational phase of the project CMG will follow the IMS developed for the Facility which includes the ISO Certification requirements as well as the additional training below:

- Environmental & Social Awareness
- Emergency Preparedness / Spill Prevention Control
- Safe Work Procedures

1.9.1 ENVIRONMENTAL and SOCIAL IMPACT AWARENESS

To ensure the achievement of compliance of environmental and worker protection, CMG will mandate that all employees participate in an environmental and social (E&S) awareness orientation.

The following issues will be addressed during the environmental awareness orientation session:

- (1) Importance of working and operating in conformity with the environmental local legislation, the CMG's Environmental Policy, and the Environmental Management Plan;

- (2) Roles and the responsibilities in the Environmental Management Plan;
- (3) Environmental protection - protecting the environment from the effects of construction by making personnel aware of sensitive environmental resources on-or near the Jobsite;
- (4) Environmental impacts consequent to their activity and the benefits for the environment deriving from their engagement;
- (5) Compliance with the operating procedures (waste management, handling and storage, and disposal of chemical and hazardous products, etc.), and the potential consequences due to non-compliance;
- (6) Procedures related to environmental emergencies and hurricane preparedness;
- (7) Environmental aspects recognition and communication - training personnel to recognize potential environmental impacts (e.g., spills, erosion control failures, improper waste management) and to inform the Supervisor; and
- (8) Liability control – demonstrating that noncompliance with regulatory requirements can lead to personal and company liability.
- (9) Opportunities and procedures for grievances, complaints and anonymous tips.

1.9.2 Emergency Preparedness/Spill Prevention and Control Contingency Training

Emergency training will likely be coordinated with Spill Prevention and Control Contingency (SPCC) training for all facility personnel and will be geared towards the specific types of incidents that are possible and tailored to the employee responsibility level. This will range from emergency notifications to planning and coordination of an event.

- Spills and Releases
- Vehicle accidents
- Storms
- Muster Plans and locations
- Evacuation Plans
- Fire Safety (including use of fire extinguishers)
- Hazardous Communications (HazCom)

The marine-based and land-based SPCC will be developed in coordination with training provided by Marittima. Clean Marine Services Group (CSG) will provide oil spill response training for its personnel at its oil treatment and recycling plant in Freeport. The land-based SPCC training will be developed in conjunction with the marine-based program and will include modules on the importance of spill

prevention and control, the methods utilized to provide effective best management practices, monitoring, maintenance, repair, and response methods. Under the International Maritime Organisation's (IMO) Oil Pollution Preparedness, Response and Cooperation (OPRC) Convention, portside facilities which handle oil are required to maintain oil spill contingency plans. One component of this is to ensure their staff are adequately trained as first responders (OPRC – Level 1). This proposal comprises the provision of training to Nautical Institute standard accreditation to OPRC Level 1 at a suitable location in Freeport. The course covers:

- Overview of spill response
- Overview of contingency plans - Introduction to incident management systems
- Operational planning
- Fate and behavior of spilt oil
- Environmental & economic impacts of oil spills
- Spill assessment and surveillance
- Health and safety
- Response strategies
- Waste management
- Communications & documentation
- Equipment maintenance
- Contractors and managing volunteers
- Practical spill response
- Induction training for drivers, workers and visitors including ingress/egress and parking requirements.

Additionally, Level 2 Senior individuals and management may take the Level 2 course. This course is conducted over 4-5 days and builds upon the modules introduced in the Level 1 course. This training will be made available to other companies on the island that require Level 2 training. CMG will procure all of the equipment necessary for oil spill response and proposes to use Marittima for training and contingency planning.

1.9.3 Safe Work Training

Safe work training includes a review of the process required to obtain a Safe Work Permit for the performance of new activities and non-routine maintenance activities (as defined by the IMS) and for using Work Instruction and Standard Operating Procedures (SOPs) for routine activities. Control Plans for specific incidents and conditions will also be reviewed. This training is required for all new employees.

1.10 OPERATIONAL CONTROL AND MONITORING

As part of the ESMP procedures for managing and mitigating risks for the project, CMG will prepare and implement control plans.

CMG will provide the following control plans referenced in the ESMP (see Table 1) below.

Table 1: CMG Control Documents

Document Title	Ref. No.
ACCIDENT AND INCIDENT REPORT	CMG-IMS-Q-FM-0018
WEEKLY ENVIRONMENTAL CHECKLIST	CMG-IMS-Q-FM-0019
APPROVED SUPPLIER INDEX	CMG-IMS-Q-FM-0020
PORT SECURITY PLAN	CMG-IMS-Q-ML-0003
EMERGENCY PREPAREDNESS AND RESPONSE	CMG-IMS-Q-PR-0018
CONTROL OF EQUIPMENT	CMG-IMS-Q-PR-0019
NOISE AND VIBRATION CONTROL PLAN	CMG-IMS-Q-PR-0020
TRAFFIC CONTROL PLAN	CMG-IMS-Q-PR-0021
WASTE MANAGEMENT CONTROL PLAN	CMG-IMS-Q-PR-0022
SPILL PREVENTION AND RESPONSE	CMG-IMS-Q-PR-0023
HURRICANE PREPAREDNESS	CMG-IMS-Q-PR-0024
SOIL AND GROUND WATER CONTAMINATION CONTROL	CMG-IMS-Q-PR-0025
AIR QUALITY CONTROL	CMG-IMS-Q-PR-0026

Additional control documents in development include a Stakeholder Engagement and Grievance Management Plan and an Environmental & Social Monitoring and Reporting Plan. These will be added to the above list of control documents once complete.

Work Instructions (WI's) will be provided, complementary to the control plans, related to the following aspects:

- (1) Environmental incidents and accidents management and reporting
- (2) Adverse weather conditions
- (3) Contaminated soil/land management
- (4) Spill management
- (5) Discharging water from site
- (6) Erosion and sedimentation control

- (7) Dust management
- (8) Noise management and monitoring
- (9) Completing the environmental log
- (10) Waste management on site
- (11) Ecological mitigation and protection
- (12) Non-conformance/corrective action reporting and management
- (13) Complaint handling procedure
- (14) Safe work permit

Additionally, CMG will maintain the following Registers and Checklists:

Table 2: CMG Registers & Checklist

Document title	Ref. No.
LEGAL AND COMPLIANCE REGISTER	CMG-IMS-Q-FM-0011
RISK AND OPPORTUNITY REGISTER	CMG-IMS-Q-FM-0006
TRAINING REGISTER	CMG-IMS-Q-FM-0022
COMPLAINTS REGISTER	CMG-IMS-Q-FM-0026
DAILY ENVIRONMENTAL LOG	CMG-IMS-Q-FM-0027
SITE VISITOR LOG	CMG-IMS-Q-FM-0030
EQUIPMENT INSPECTION AND CALIBRATION FORM	CMG-IMS-Q-FM-0007
ACCIDENT REGISTER	CMG-IMS-Q-FM-0025
CUSTOMER FEEDBACK	CMG-IMS-Q-FM-0023

1.11 MONITORING AND AUDITING

CMG will establish a program to monitor E&S compliance of operational activities in accordance with the established procedures defined in the ESMP. These activities may include daily, weekly, or periodic inspections.

CMG will produce procedures that establish corrective actions for non-compliance with established EMP procedures and identify the root causes for the issue. These corrective actions are intended to not only provide an immediate fix, but to also help ensure that similar non-compliances do not occur again.

Being a new facility, CMG will conduct monthly E&S audits, while the GBPA conducts quarterly audits for at least the first year of operation. The frequency of internal and external audits may be relaxed in the future. During the audits CMG will present documentation on the status and compliance of all aspects of the ESMP. Additional reviews of the ESMP components are outlined in Table 3.

1.12 MANAGEMENT REVIEW

CMG Management team will meet once per year to review the status of the ESMP, review audit results, discuss non-conformances and corrective actions, as well as complaints received, and resolutions to those complaints. A Management review report will be maintained for reference of findings and resolutions. Management reviews are described in Control Document CMG-IMS-Q-PR-0002 (see Table 3).

1.13 OPERATIONS PHASE WORKER MANAGEMENT

CMG has developed a number of internal employee policies that will govern employment and management conduct. These specific policies will be flowed down to subcontractors and vendors operating at the facility. Copies of all subcontractor and vendor employment management policies will be reviewed as part of the procurement due diligence process. All workers (internal and external) will be provided the opportunity to file grievances related to work at the PRF and all grievances filed will be handled per the CMG policy as described in the relevant control document. Table 2 below identifies the specific employment issue and relevant control document that guides CMG management, and human resources departments regarding employment practices for employees and subcontractors/vendors at the PRF.

Table 3: CMG Human Resource Policy Control Documents

HUMAN RESOURCE CONTROL DOCUMENTS FOR EMPLOYMENT			
Name	Reference No.	Policy Review/Update Period	Application/Issue

ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (ESMP) PART 2: OPERATIONS

INTEGRATED MANAGEMENT SYSTEM (IMS) MANUAL	CMG-IMS-Q-ML-0001	Annual	Provides overall employment processes including hiring, promotion, harassment, and complaints.
QUALITY / HEALTH, SAFETY & THE ENVIRONMENT (QHSE) POLICY	CMG-IMS-Q-PO-0001	Annual	Sets out general expectations for compliance and continuous improvement.
MANAGEMENT REVIEWS PROCEDURE	CMG-IMS-Q-PR-0002	Annual	Provides for management review processes.
RESOURCE MANAGEMENT PROCEDURE	CMG-IMS-Q-PR-0003	NA	Identifies capital and operation expenditure priorities.
INTERNAL AUDIT PROCEDURE	CMG-IMS-Q-PR-0004	Quarterly	Systems audit procedures (internal).
CUSTOMER SATISFACTION/ COMPLAINT HANDLING PROCEDURE	CMG-IMS-Q-PR-0005	Annual	Addresses how customer, and other third-party complaints are addressed.
OPERATIONAL CONTROL PROCEDURE	CMG-IMS-Q-PR-0006	Annual	Defines material flow processes.
PROCUREMENT MANUAL	CMG-IMS-Q-PR-0008		Defines procurement policies and due diligence.
COMMUNICATION AND ENGAGEMENT PROCEDURE	CMG-IMS-Q-PR-0010	As Needed	Defines Stakeholder Engagement & Steering Committee process.

ACCIDENT AND INCIDENT REPORTING PROCEDURE	CMG-IMS-Q-PR-0012	As Needed	Describes policies for reporting, investigations and procedures.
LEGAL COMPLIANCE AND PROCEDURE	CMG-IMS-Q-PR-0014	Annual	Defines legal compliance for the PRF including updates.

In addition to, and as provided for above, CMG has or will develop the following additional HR documents that will apply to all workers (inclusive of non-CMG employees) and that will cover the following aspects:

Table 4: Additional CMG Worker Policy Documents

EMPLOYEE HANDBOOK	CMG-IMS-Q-ML-0002
SMOKING POLICY	CMG-IMS-Q-PO-0002
DRUGS POLICY	CMG-IMS-Q-PO-0003
ALCOHOL POLICY	CMG-IMS-Q-PO-0004
SAFE DRIVING POLICY	CMG-IMS-Q-PO-0005
CONFLICT OF INTEREST POLICY	CMG-IMS-Q-PO-0006
GIFTS AND GRATITUDE POLICY	CMG-IMS-Q-PO-0007
ANT-BRIBERY AND CORRUPTION POLICY	CMG-IMS-Q-PO-0008
MODERN SLAVERY POLICY	CMG-IMS-Q-PO-0009
INDUCTION RECORD FORM	CMG-IMS-Q-FM-0021
ENVIRONMENTAL SOCIAL GRIEVANCE POLICY	CMG-IMS-Q-PO-0010

1.14 TRANSITION TO OPERATIONS

This ESMP address the environmental, health (including occupational health), and social impacts, aspects, mitigation, monitoring and documentation requirements for the operations phase of the project. In this context “operations” are defined as the transition to full-time operations following facility commissioning and prove-out. Commissioning of the new facility will be the responsibility of the general contractor to demonstrate that all systems are functioning properly. This involves operating each component, such as, motors, pumps, instrumentation, valves, monitors, sensors, etc., through a series of operational tasks to demonstrate their functionality per the approved Test and Commissioning requirements stipulated in the contract documents and project specifications. The commissioning is typically completed with an inert material (in this case it will likely be process water) so that in the event of a malfunction no release of actual product will occur. Commissioning with inert liquids significantly reduces risks to the environment and workers during these operations. Following successful commissioning, the project will move into the prove-out phase. The prove-out phase involves introducing actual product into the system and a ramp up to full throughput treatment volumes. This process is guided by the Acceptance Plan which is elucidated in the project

specifications and contract documents. The prove-out phase demonstrates system performance per the specifications for emissions, throughput, treatment capabilities, etc., and typically involves running a number of various mixtures and volumes to ensure the system is capable of successful operations under a range of operating conditions and parameters. It also typically involves adjustments to sensors, monitors (including any CEMS), and test runs to validate the system performance. Strict compliance to the environmental permit and emissions standards for air quality is typically suspended during the prove-out phase so that any problems (bugs) can be identified and solved and so that optimum operating parameters can be established to maximum effective treatment and throughput objectives. The specific number of hours the system can be operated in this state of “non-compliance” is generally defined by the operational permits/approvals. Given the consistent waste streams to be treated and straight-forward air pollution controls, it is not anticipated that this period should be significant. Water quality limits will be applied immediately upon completion of commissioning as the facility will maintain the ability to re-treat any liquid emissions prior to discharge to the deep well that do not first meet the effluent quality requirements. The prove-out phase is typically completed by the Operator with oversight and technical guidance provided by the designer of record and manufacturer representatives. Operator and maintenance staff training is generally completed during the prove-out phase and should include all shifts as well as management and environmental staff members.

Once prove-out is successful and the project transitions to full operations, operating under all compliance and emissions requirements. This ESMP addresses the full operations phase of the PRF and will stay in effect throughout the full lifespan of the facility with yearly updates as necessary.

2.0 GENERAL OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS

This Section of the ESMP describes the general occupational safety and health requirements for the operations phase of the PRF. The occupational health and safety requirements generally follow the industry standard safety hierarchy that includes eliminating risks, source control, risk minimization, and lastly, the use of personal protective equipment (PPE). These requirements will apply to all phases of the project, including initial construction, periodic improvements, maintenance and repair work and other operations related tasks.

2.1 WORKER PROTECTION

Occupational health and safety issues during the operations of receiving facilities are common to those of most large infrastructure, chemical, and industrial facilities, and their prevention and control is discussed in the General EHS Guidelines. These issues include, among others, exposure to physical hazards associated with the use of heavy equipment, vehicles for transport and the use of powered or mechanical motors, tools and equipment. Worker exposures to noxious fumes, odours, dust, chemicals (through absorption, inhalation, ingestion or injection), and/or handling liquid or solids are possible. Ergonomic injuries from repetitive motions as well as strains are also a factor. Specific occupational health and safety issues relevant to port and hydrocarbon recovery and treatment operations primarily include the following:

- Physical hazards
- Chemical hazards
- Confined spaces
- Lock-Out/Tag-Out (LO/TO)
- Working at height
- Slips, Trips and Falls
- Vehicle collisions
- Drowning
- Electrical hazards
- Exposure to the elements
- Ergonomic injuries
- Exposure to organic and inorganic dust, and
- Exposure to noise.

CMG will maintain a robust system for identifying, reducing, mitigating and reporting of any near misses, lost-time injuries, potential or actualized significant injury and/or fatalities (SIFs) at the

Facility. There are three primary mechanisms to reduce the likelihood of a violation of EHS standards and personnel injuries. These are:

- Proper Training
- Job Planning
- Proper Execution

2.1.1 Job Specific Training

All employees will be properly trained per their job functions and responsibilities. For example, the training described in Section 1.9 will be provided to all employees (including managers) and updated yearly. However, specific personnel will receive additional training, as required, to perform their specific job function. For example, a forklift operator must receive training on the operation of the equipment and pass a certification as a competent individual. Only individuals trained and qualified to operate the forklift will be permitted to operate it. Electrical system maintenance is another example. Only the Electrical Maintenance personnel trained and qualified to maintain and repair any electrical component will be permitted to complete these tasks. Specific employee qualifications, responsibilities and training requirements will be determined as the project develops and revisions to this initial ESMP will document those revisions.

All subcontractors working at the PRF will receive initial induction safety training (typically a two-hour +/- in-class training/review) at the facility. This induction training will focus on basic safety requirements, inspections, emergency response actions (alarms, muster sites, exit strategies, etc.), and reporting requirements. It will also include disciplinary actions for failure to follow the facility rules. Non-workers, (visitors, guests, third-party inspectors, etc.), will not be required to complete the contractor safety induction training but will require visitor badging and escort by a CMG (badged) representative. Visitors will also be required to wear (and be provided) PPE as appropriate.

2.1.2 Job Planning

CMG will incorporate the following requirements into the HASP (see Section 3.3) as well as routine operations:

- Job Hazard Analysis
- Safe Work Permit
- LO/TO
- Confined Space Entry
- Loading/Unloading operations
- Crane safety
- Shutdowns

2.1.3 Job Execution

Safe job execution is a function of proper training, planning and attention to detail. Common tasks that have a demonstrated risk of environmental, occupational or social risk have been assigned a specific Work Instruction (WI). Additional WI control documents will be developed as the project proceeds into operations and as additional needs are identified. A WI describes the specific task function, engineering controls suitable for risk reduction, training requirements, safety requirements, procedures to follow, the requirements/applicability for a job hazard analysis (JHA), first-aid and emergency response considerations, work permit requirements (for example if a Confined Space or Hot Work permit is required) and the types of PPE required to complete the task. Once a Safe Work Permit has been issued, the task can proceed. The first step is to assess if the proper individuals, tools, safeguards, monitoring, and oversight is available to safely complete the job. This will of course vary from job to job and may range from an entire plant shutdown for new critical equipment installation to the replacement of overhead lightbulbs. While the specific tasks will vary, the process of pre-work assessment, WI document review, JHA review, permit issuance, resource identification, proper oversight, and sign-off will be applied to all jobs. Table 5 provides a summary review of the operation phase occupational and safety aspects, general actions/mitigations, responsible party and references. This general guide is detailed in the specific operations phase risk and mitigation analysis (Sections 4-10).

2.2 PERSONAL PROTECTIVE EQUIPMENT

CMG will provide all personal protective equipment (PPE) requirements for employees and visitors at no cost to the employee or visitor. The specific PPE to be assigned is job/task dependent and is defined by the JHA process, WI document and Safe Work Permit. In general, PPE anticipated to be provided and stored on-site include, but are not limited to:

- Rubber boots with steel toe and steel shank, non-slip soles
- Rubber gloves
- Latex gloves
- Splash resistant coveralls
- Smocks for laboratory personnel
- Safety glasses and goggles
- Dust masks (appropriate for task)
- Face shields
- Hearing protection
- Hard hat (where required)
- Safety harnesses for working at height

- LO/TO locks
- Pipe blinds/flanges
- Electrical grounding devices
- Sunscreen
- Bug repellent
- Cool Drinking water

The office area will be designated as a “safe area” where no PPE is required. During the visitor induction or employee induction, the PPE required for each area will be outlined. In addition, signs will be posted to advise of the required PPE for each area.

CMG maintains a policy for COVID-19 that is consistent with Bahama governmental guidance and policy. CMG presently requires vaccination of all employees or weekly PCR testing to confirm health status. Employees that are positive or come into contact with another positive person are quarantined for a period of ten days and then allowed back on site once a negative PCR test is provided. This policy will be extended to all site visitors/workers and will be managed by the site Safety Officer.

2.3 FIRST AID

CMG will maintain a fully stocked first aid station in the Office breakroom and another at the Processing Plant building. The first-aid kit will be inspected quarterly and restocked as-needed. CMG will maintain a qualified First Aid responder on site at all times (at least one individual per shift).

Emergency first aid will be provided by the nearest Emergency Care Providers:

Daytime services

- Hawksbill Clinic – Hawksbill Village
+1 242 352 7722
- Eight Mile Rock Clinic – Bain Town
+1 242 348 2227

Full-service Care (24-hours)

- Rand Memorial Hospital
+1 242 350 6700 or 242 352 2689

Table 5 below provides general guidance on occupational safety that will be applicable to the PRF. It is not inclusive of all potential occupational requirements. These will be addressed by the job

hazard analysis (JHA) and Work Instructions (WI) documents. It is provided as a general guide. Operations specific occupational aspects are provided in Section 9.

Table 5: General Occupational Health and Safety Aspects

ESMP Aspect	Action/Mitigation Measure	Responsible Party	Standard/Reference
Physical hazards	<ul style="list-style-type: none"> • All machinery shall be guarded as appropriate • Boiler safety • LO/TO • Forklifts and moving equipment / vehicle safety • No ionizing or other radiation hazards are anticipated 	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)
Chemical hazards	<ul style="list-style-type: none"> • Chemical containers must be labelled and stored properly • Vapors and fumes that come from welding or exposure to solvents must be controlled and properly vented. Exposure assessments are required. PPE may be required. • Gases like acetylene, propane, carbon monoxide and helium and flammable materials like gasoline, solvents, and explosive chemicals must be properly labelled, stored, banded and ventilated. • Chemical pesticides should be used sparingly and per manufacturers instructions. 	CMG	
Confined spaces	Follow HSE/OSHA Confined spaces rule and industry guidance.		<u>CONFINED SPACES - HSE</u>
Working at height	Working from heights, including ladders, scaffolds, roofs, or any raised work area. Safety railings, toe boards, and other building components should be used to avoid working at height. Other requirements include:	CMG	<u>WORK AT HEIGHT - OCCUPATIONAL HEALTH AND SAFETY (HSE.GOV.UK)</u>

	<ul style="list-style-type: none"> Ladder inspection and safety standards Scaffold inspection and safety standards Roof work standards 		
Slips, Trips and Falls	Spills on floors or tripping hazards, such as blocked aisles or cords running across the floor shall be assessed for each task by the JHA. Good housekeeping shall be practiced with daily inspections and logs.	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)
Vehicle collisions	Vehicle collisions for forklifts will be mitigated by dedicated drive paths / markings and signage and/or barriers. Other vehicles are managed per the TMP.	CMG	
Drowning	Ring buoys will be placed at appropriate intervals along the quay.	CMG	U.S.C.G. Safety Regulations, and Bahamas Health and Safety at Work Act.
Electrical hazards	Electrical Area Classification / Bahama Building Code	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)
Exposure to the elements	<ul style="list-style-type: none"> Heat stress will be assessed as part of the JHA Sunblock, hats with visors/brims and long-sleeve shirts to be provided for sun protection for outside workers. 	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General

Ergonomic injuries	<p>Ergonomic Hazards including but not limited to the following will be assessed for mitigation for each task as part of the JHA:</p> <ul style="list-style-type: none"> • Improperly adjusted workstations and chairs • Frequent lifting • Poor posture • Awkward movements, especially if they are repetitive • Repeating the same movements over and over • Having to use too much force, especially if you have to do it • Frequently • Vibration 	CMG	EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)
Exposure to organic and inorganic dust	<ul style="list-style-type: none"> • Generated by moving equipment and vehicles, vibration and wind • May pose respiratory risk, eye, nose and throat irritation, poor visibility. 	CMG and General Contractor	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example).
Exposure to noise.	Hearing safety assessed by location and task. Hearing protection for workers (permanent and transitory) to be provided at entrances, along with warning signage.	CMG and General Contractor	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)

3.0 ENVIRONMENTAL, HEALTH AND SOCIAL MANAGEMENT RESPONSIBILITIES DURING OPERATIONS

3.1 INTRODUCTION & RESPONSIBILITIES

Part 2 of the ESMP (this document) is specific to the operations phase of the project once prove-out is complete. The ESIA identified potential pre and post-mitigation impacts associated with operations. Each of these has a specific action/mitigation measure identified with responsible party and reference for its successful completion and is described below.

Operational compliance to all environmental, health and social management requirements is the responsibility of the CMG Environmental Site Officer (ESO). This person reports directly to the Facility Manager (FM) and will have full access to the CMG senior management team. The project description for this position is as follows:

1. Provides environmental technical requirements and guidance to the Facility Manager (FM), Operations Manager (OM) and other PRF team members;
2. Coordinates environmental permitting and reporting requirements for the PRF;
3. Monitors environmental system performance;
4. Ensures that environmental controls and materials are on-site and properly installed and maintained;
5. Conducts environmental awareness training for operations staff and subcontractors, and prepares training materials and guideline documents;
6. Participate in periodic meetings with regulatory agencies to review environmental requirements and compliance;
7. Monitors energy use, conservation methods, and reports on potential reductions and other opportunities for savings and for reducing the facility's carbon footprint;
8. Responsible for the development and revisions of the Environmental and Social Management Plan (ESMP) and other site-specific environmental aspects and registers, including participating in ISO Certification inspections and updates (ISO 14001 Environmental Management System);
9. Conducts monthly inspections of operation activities to review compliance with environmental requirements, permits and this ESMP;
10. Signs off on Safe Work Permits;
11. Acts as the primary point of contact for continued stakeholder engagement during committee meetings, public meetings and on social media; and
12. Conducts environmental audits of the facility as well as vendors and subcontractors to ensure compliance to the provisions of this ESMP and relevant documents/requirements.

Occupational safety and health is the responsibility of the Safety Department and designated Safety Officer (SO). The SO will report to the FM and will have full access to the CMG senior management team.

The project description for this position is as follows:

1. Provides occupational safety and health technical requirements and guidance to the Facility Manager (FM), Operations Manager (OM) and other PRF team members;
2. Coordinates all health and safety programs and reporting requirements for the PRF;
3. Monitors for safety performance and metrics;
4. Ensures that safety controls and materials are on-site and properly installed and maintained;
5. Conducts safety awareness training for operations staff and subcontractors, and prepares training materials and guideline documents;
6. Participate in periodic meetings with regulatory agencies to review safety requirements and compliance;
7. Reviews subcontractors Health and Safety Plans (HASP) and other documentation including audits and site inspections.
8. Assist in the development and revisions of the Environmental and Social Management Plan (ESMP) and other site-specific environmental aspects and registers, including participating in ISO Certification inspections and updates (ISO 45001 Occupational Health & Safety Management);
9. Signs off on Safe Work Permits;
10. Acts as a point of contact for continued stakeholder engagement during committee meetings, public meetings and on social media; and
11. Conducts inspections of operation activities to review compliance with occupational, safety and health requirements, permits and this ESMP.

4.0 OPERATIONS PHASE TRAFFIC MANAGEMENT

4.1 DESCRIPTION OF IMPACT

Operational equipment (primarily forklifts and vehicles) moving about the facility, and commercial delivery and transport tankers and trucks entering and leaving the site will generate traffic with potential for vehicular, operations and pedestrian conflicts. Exhaust emissions is also another potential impact (address in section on air emissions). In addition, according to industry publications the majority of construction transport accidents result from the inadequate separation of pedestrians and vehicles. This can usually be avoided by careful planning, particularly at the design stage, and by controlling vehicle movement during operations. Average daily trips (ADT) for the site is estimated as follows and totals 78/day:

- | | | |
|--|----|--------------------------------------|
| • Employee trips (9/shift at 2 shifts/day) | 18 | Passenger vehicles |
| • Visitor trips (5/day) | 10 | Passenger vehicles |
| • Standard Deliveries (5/day) | 10 | Commercial trucks |
| • Process deliveries (10/day) | 20 | Tanker trucks (11,000 gal. capacity) |
| • Process shipment (10/day) | 20 | Tanker trucks (11,000 gal. capacity) |

As the site is planned to be operational 24 hours/day, the heavy tanker trips will likely be spread over the full period whereas commercial deliveries and visitors will be across normal working hours. Workers will enter and leave primarily during shift changes.

This number of trips for an industrial site is considered minimal and is likely relatively small in comparison to adjacent existing operations (Container Port and Cemex specifically).

The following transport routes will be used:

Shipyard to Basin 3 for oil and oily waste using the Warren J Levarity Highway over distance of 7km.

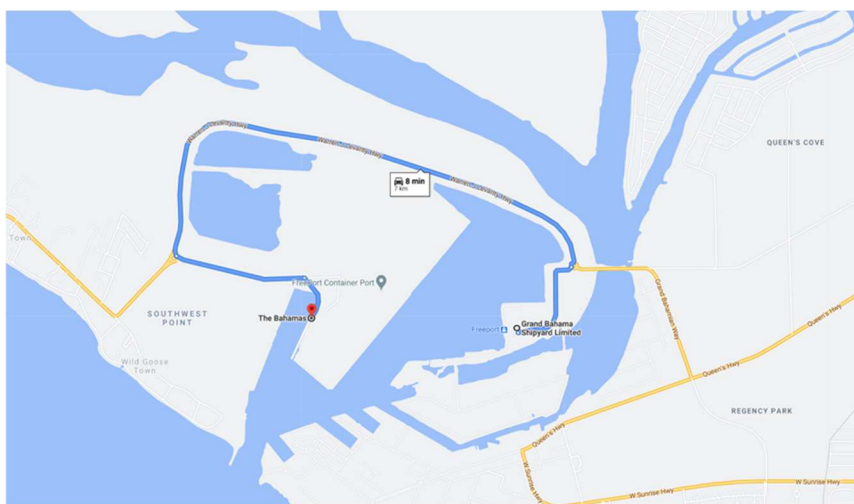


Figure 6: Truck transport along J. Levarity Hwy.

Basin 3 to GB Power Station for re-processed oil using the Warren J Levarity Highway, Queens Highway over distance of 9.3km.

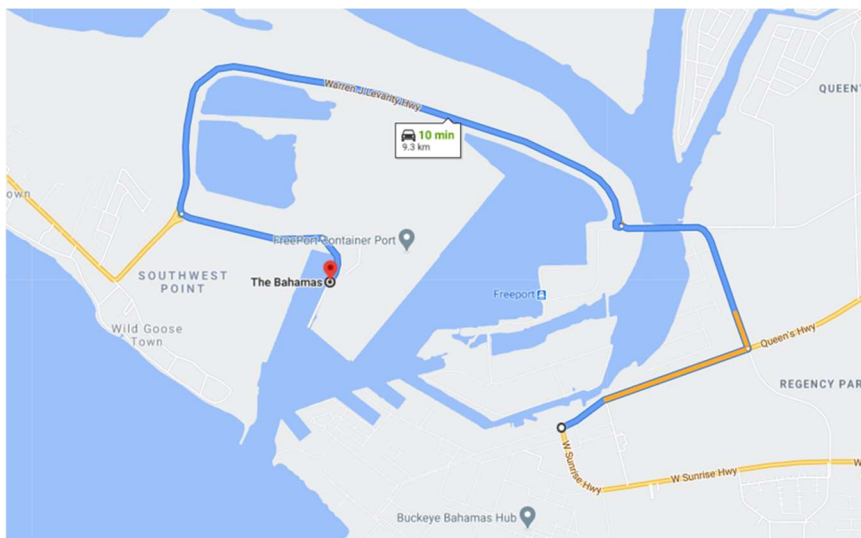


Figure 7: Transport route over Queens Hwy.

Basin 3 to Pineridge Landfill for solids using the Warren J Levarity Highway, Grand Bahama Highway over a distance of 15 km.

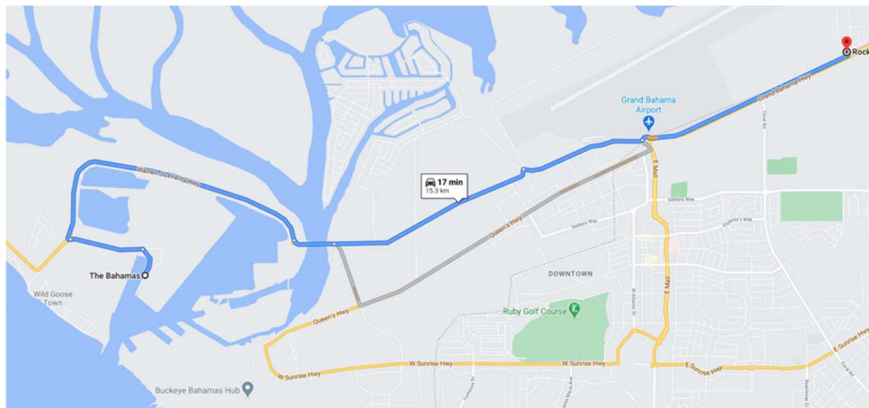


Figure 8: Transport route along Grand Bahama Hwy.

According to a review of the existing potential traffic conflicts the following is noted:

1. There are no current pedestrian access or crossing locations within or adjacent to the project site.
2. There are no school crossings located in the vicinity.
3. There are no bike paths or crossing locations at or in the nearby vicinity.
4. There is no signalization at the nearest intersection to the project site.

5. There are no rail crossings at or near the project site.
6. There is no anticipated reduction in level of service for the existing road network and nearest intersection.
7. The existing public access road is industrial in nature with nominal 11 foot-wide travel lanes and two-way flow without centre line or edge striping.

4.2 DESCRIPTION OF MITIGATION MEASURES

Impacts as a result of operational traffic are somewhat mitigated by the location and isolation of the PRF site. It is located within the Port area, off of Freeport Container Road which is dedicated for port related traffic. In order to mitigate operational traffic impacts, the following actions will be implemented at the PRF:

- Require proof of roadworthiness, insurance and licenses for all commercial vehicles used by contractors.
- Enforce safe operating speeds, use of back-up alarms, courteous driving behaviour, and random drug screening.
- Require immediate drug testing for any vehicular incident.
- Entrances and exits - provide separate entry and exit gateways for pedestrians and vehicles;
- Walkways - provide firm, level, well-drained pedestrian walkways that take a direct route where possible;
- Crossings - where walkways cross roadways, provide a clearly signed and lit crossing point where drivers and pedestrians can see each other clearly;
- All workers and visitors will be required to wear high visibility work vests or shirts;
- Visibility - make sure drivers driving out onto public roads can see both ways along the footway before they move on to it; and
- Obstructions – do not block walkways so that pedestrians have to step onto the vehicle route.

Good planning can help to minimise vehicle movement around a site. To limit the number of vehicles on site:

- provide car and van parking for employees and visitors away from the work area;
- control entry to active operations areas;
- Provide a golf cart or other vehicle that is operated by a CMG employee to taxi visitors around the site (so that they do not use their personal vehicles to access areas that are dangerous or not appropriate); and

- plan for a material/supply receiving area that is proper directional signage at the entrance so that delivery vehicles do not have to cross the site or other active operations.

CMG will take steps to make sure that all workers are fit and competent to operate the vehicles, machines and attachments they use on site by, for example:

- checks when recruiting drivers/operators or hiring contractors;
- training drivers and operators; and
- managing the activities of visiting drivers.

Vehicle travel paths visibility and turning will include the following considerations and components:

- The need for vehicles to reverse should be avoided where possible as reversing is a major cause of fatal accidents;
- Site and area speed limits will strictly be enforced;
- One-way systems can reduce the risk, especially in storage areas; and
- A turning circle could be installed so that vehicles can turn without reversing.

CMG has developed a Traffic Management Plan (TMP). This is included in Appendix K..

Traffic signs, including stops signs at intersections, cross-walks and other potential conflict points will be added. Traffic calming devices are not generally required but will be installed if necessary. Site speed limits will be strictly enforced.

During the 24-hr per day operations phase, exterior lighting will illuminate the common travel paths.

4.3 MONITORING AND REPORTING

The CMG Environmental Officer and Safety Officer will be responsible for monitoring of site traffic management during operations. All vehicles will be inspected for proper operational condition, current insurance and overall road worthiness. Violations of the TMP, or other improper activities will be identified and reported to the CMG FM and HR if appropriate. Unsafe vehicle operation will not be tolerated and repeated offences will be cause for removal from the Facility of the offending operator. Revised traffic patterns, additional temporary signage or other traffic calming measures will be implemented as-needed if it is determined that current measures are not adequate. The CMG Environmental Officer or Safety Officer will communicate any required changes to the FM and GBPA. Pervasive or reoccurring traffic issues, accidents or incidents will also be reported to CMG Management and the GBPA for appropriate mitigation and disciplinary actions as appropriate.

4.4 TRAINING

All equipment operators will be required to provide adequate proof of the appropriate license and experience to operate the respective vehicles.

4.5 OTHER RESOURCES NEEDED

Relevant CMG documents include:

- Safe Driving Policy (CMG-IMS-Q-PO-0005)
- Traffic Control Plan (CMG-IMS-Q-PR-0021)
- Draft Traffic Management Plan (CMG-BA3-C-PR-8000)

4.6 DOCUMENTATION OF COMPLIANCE

A Log of site activities, including vehicle operations, traffic counts and compliance to the CMG Safe Driving Policy will be maintained.

4.7 ROLES AND RESPONSIBILITIES

The CMG EO and SO will be responsible for maintaining and documenting compliance with the Safe Driving Policy (CMG-IMS_Q-PO-0005). Any accidents or incidents will be recorded.

5.0 OPERATIONS NOISE MANAGEMENT

5.1 DESCRIPTION OF IMPACT

Noise Impacts can be anticipated from the normal plant operations including process equipment, pumps, motors, valves, air actuators, power tools, steam actuators and bleed-offs, combustion motors for generators and vehicles and alarms and other intercom announcements. CMG has committed to utilizing well-maintained and noise compliant equipment. The noise during operations is not expected to exceed 70dBA. Monitoring during these phases will allow CMG to take mitigation actions to reduce the noise down to these limits. Noise levels measured are affected more due to local traffic and background noise from the industrial area which account for the peaks in the measurements per the baseline study (see Appendix B). The baseline study has taken measurements during a 4-day period with the results indicating the LAeq does not exceed 65dBA. The noise levels are consistent with the movements of ships in the container terminal and Bahama Rock loading operations. Requirements for noise reduction methods, monitoring, and mitigation (including PPE where other measures are not appropriate or effective), training and reporting are provided below.

Noise limits for the PRF will be set as follows (see Table 6):

Table 6: Noise Control Levels (Source: WBG/IFC General EHS Guidelines)

Location	Noise level limits in Equivalent level (LAeq, 8h)	Mitigation / Control
At perimeter fence (outside)	45-50 dB(A) or ambient	Ambient readings indicated an average of 59.2 at the northern boundary. This is due to the existing industrial nature of the port area.
General indoor administrative areas	45-50 dB(A)	Interior noise survey to be completed once operations are ongoing. Mitigation measures will be retrofitted if needed (but unlikely).
Processing plant / During maintenance work, repairs or temporary construction	No employee should be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear should be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C).	The use of hearing protection should be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices provided should be capable of reducing sound levels at the ear to at least 85 dB(A). All such areas shall have appropriate signage. Hearing conservation devices (ear plugs or ear muffs) shall be provided to all employees and visitors by CMG at no cost.

5.2 DESCRIPTION OF MITIGATION MEASURES

The following mitigation measures will be used to manage and reduce noise impacts during operations:

- Implement noise control measures at the source by ensuring all mufflers and spark arrestors are in place and functioning;
- Limit heavy equipment use to daytime hours only (0600 to 2100);
- Post signage warning of dangerous noise levels if levels above 70 dB are expected;

- Use noise attenuator shields if needed,
- Make sure all employees, workers and visitors have hearing protection devices available and that they are utilized per the occupational health standards; and
- Use noise attenuation booths for pipe cutting when possible.

5.3 MONITORING AND REPORTING

The CMG EO and PM will be responsible for monitoring and reporting on noise levels during construction to demonstrate compliance. Logs of all reading will be completed.

5.4 TRAINING

All employees and workers will be notified of the expectations for noise attenuation and hearing protection. No additional training is required.

5.5 OTHER RESOURCES NEEDED

A portable and calibrated noise level meter will be required onsite and provided by CMG. If portable noise barricades are required, the GC will be required to provide them during the duration of the construction phase. Hearing protection devices will be provided by the GC for their employees/workers and by CMG for their employees and visitors.

5.6 DOCUMENTATION OF COMPLIANCE

The noise measurements will be recorded in the project activities log book to document compliance.

5.7 ROLES AND RESPONSIBILITIES

The CMG EO and PM will be responsible to maintaining compliance to the noise management provisions. The GC will be responsible for managing all noise generating equipment and activities.

6.0 AIR EMISSIONS DURING CONSTRUCTION

The CMG PRF will generate air emissions during operations. Operations related process equipment emits emissions related to the use of a boiler, generator, process ventilation and traffic. Dust is not likely to be a concern during operations as that portion of the site used for vehicle traffic will be paved. Air emissions will likely include the following:

- Volatile Organic Compounds (VOCs) and Semi-VOCs;
- Methane;
- Nitrous Oxides; and
- Sulfur Dioxide.

The specific quantities of air emissions will be a factor of the type and condition of equipment specified, operating temperatures, frequency of filling/off-loading (turn-over), vapor pressures, and ambient weather conditions anticipated. There are a number of calculation methods, including software, that can be utilized to estimate air emissions. Total loss calculations should include, standing losses, working losses, fugitive losses and total routine losses.

6.1 DESCRIPTION OF AIR EMISSIONS DURING OPERATIONS

According to the U.S. EPA (2019 estimates), emissions from the petroleum and natural gas production sector accounted for 117MMT CO_{2e}¹. Emissions from the process, transfer and storage equipment will result in losses of oil and its constituents, in particular the lighter phase volatile compounds through fugitive, loading/unloading, and storage. The following is a description of the anticipated impacts generated during operations from fugitive and controlled emissions.

6.1.1 Description of Impacts for Fugitive Air Emissions

Air emissions will occur as a result of fugitive emissions during operations. Fugitive emissions are leaks and other irregular releases of gases or vapors from pressurized piping, valves and containment structures. The proposed PRF will receive, process, and store oil waste and products with the goal of providing a reusable resource (cleaned oil) for use by local industry. Due to the requirements to transfer products from the receiving unit to the final storage tanks, the likelihood for product losses due to the volatilization and release of gases, in particular where those processes are heated, is considerable. Fugitive source air emissions refer to emissions that are distributed spatially over a wide area and not confined to a specific discharge point (such as a stack). Fugitive emissions have the potential for much greater ground-level impacts per unit than stationary source emissions, since they are discharged and dispersed close to the ground. The two main types of fugitive emissions are Volatile Organic Compounds (VOCs) and particulate matter (PM). Other contaminants (NO_x, SO₂ and CO) are mainly associated with combustion processes (IFC Final General EHS

¹ MMT = Million Metric Tonnes / CO_{2e} = Carbon dioxide equivalent

Guidelines). VOCs may also contain toxic or potentially carcinogenic compounds such as benzene and ethylbenzene.

The actual determination of the specific quantities for these losses will occur during the design phase of the project but given the size of the facility, and the high number of storage tank turnovers, the expected volumes are likely in the 10,000 to 20,000 lb/annum range. There are industry and national standards (for example the United States EPA “Final Oil and Natural Gas Sector New Source Performance Standards (NSPS), established in 2016) as well as American Petroleum Institute (API), for example, Publication 4589 “Fugitive Hydrocarbon Emissions from Oil and Gas Production Operations”. Final estimations for fugitive emissions, by type and quantity, as well as per system component, will be provided by the final engineering process. The primary impact to the environment from the release of fugitive hydrocarbon emissions is from greenhouse gas (GHG) contributions to the atmosphere. These emissions, along with others generated during processing, will contribute to an increase in GHG that, without mitigation, will contribute incrementally to anthropogenic global warming (AGW). Resources to be consulted to assist in the estimation and for potential control options include the US EPA, “Small Entity Compliance Guide for Oil and Natural Gas Sector: Emission Standards for New, Reconstructed, and Modified Sources” (US EPA 2016).

6.1.2 Description of Impacts from Emissions of Process Air Emissions

Emissions from the process, transfer and storage equipment will result in losses of oil and its constituents, in particular the lighter phase volatile compounds through fugitive, loading/unloading, and storage. Given the relatively high volume of turnover in the storage tanks, emissions from that system will likely be larger than the other system components such as pumps, valves and transfer lines. Impacts from all of these releases include the following:

- Generation of VOCs and potentially SVOCs;
- Generation of NO_x;
- Generation of CH₄;
- Generation of CO₂; and
- Generation of odours

The specific quantities of these operational releases will need to be determined based on the specific system throughput, configuration, and mitigation systems deployed. This ESMP will be updated with this data once it is completed during the project’s final design phase.

6.1.3 Description of Impacts from Emissions of Combustion Engines during Operations

The primary emissions from combustion exhaust sources are sulfur dioxide (SO₂), nitrogen oxides (NO_x), carbon monoxide (CO), particulate matter (PM), and greenhouse gases such as carbon dioxide (CO₂). Depending on the fuel type and quality, other substances such as heavy metals, unburned hydrocarbons and other VOCs may be emitted in smaller quantities but may have a significant influence on the environment due to their toxicity and/or persistence. These sources will

primarily consist of truck and transport vehicles delivering the waste liquids and hauling the final cleaned oil product off-site. Additional vehicles include routine deliveries, passenger vehicles, the emergency backup generator and the oil-fired package steam boiler unit.

6.2 DESCRIPTION OF MITIGATION MEASURES

The following is a description of the mitigation measures to be deployed for control of process and exhaust emissions during operations. Mitigation measures should be developed as part of the final design process to meet the IFC/WHO Ambient Air Quality Guidelines per Table 1.1.1 (excerpted below).

Table 7: Portion of Table 1.1.1 from WHO Ambient Air Quality Guidelines

Pollutant	Averaging Period	Guideline value in $\mu\text{g}/\text{m}^3$
Sulfur dioxide (SO_2)	24-hour	20 (guideline)
	10 minute	500 (guideline)
Nitrogen dioxide (NO_2)	1-year	40 (guideline)
	1-hour	200 (guideline)
Particulate Matter PM_{10}	1-year	20 (guideline)
	24-hour	50 (guideline)
Particulate Matter $\text{PM}_{2.5}$	1-year	10 (guideline)
	24-hour	25 (guideline)
Ozone	8-hour daily maximum	100 (guideline)

Notes:

1. Target limits for the PRF are established by the WHO “guideline” values.

6.2.1 Mitigation Measures for Routine Air Emissions from Operations

Emissions from routine operations, including fugitive, loading/unloading, and storage, should be controlled through the deployment of the best system of emission reduction (BSER). The specific mitigation measures are to be designed to control emissions per the BSER standard and shall be included in the final design package and described in the final process narrative. Potential mitigation measures should consult the appropriate design standard for performance requirements. An example from the U.S. EPA, Final Subpart OOOOa Control Requirements (see excerpts from Table 1-1 of the Standard) is provided below for reference.

Table 8: Specific Control Requirements from US EPA Standard

Potential Emission Source	Potential Control Requirements
Wet seal centrifugal compressors	95% reduction of emissions
Reciprocating compressors	Replace the rod packing on or before 26,000 hours of operation or 36 calendar months or route emissions from the rod packing to a process through a closed vent system under negative pressure.
Pneumatic controllers	Natural gas bleed rate no greater than 6 standard cubic feet per hour (scfh).
Pneumatic pumps	95% control if there is an existing control or process on site. 95% control not required if; <ul style="list-style-type: none"> Emissions are routed to an existing control that achieves less than 95% or It is technically infeasible to route emissions to the existing control device or process (non-greenfield sites only).
Equipment leaks at onshore natural gas processing plants	Leak detection and repair (LDAR) program reflecting the leak definitions and monitoring frequencies established for 40 CFR part 60, subpart OOOa.
Storage vessels	<ul style="list-style-type: none"> Control VOC emissions using vapor recovery or combustion control device to reduce emissions by 95%, Applies to storage vessels with a potential to emit (PTE) equal to or greater than 6 tons per year (tpy) of VOC.

Potential control measures to be employed will be designed as part of the air pollution control (APC) system and will likely include the following components:

- Wet/Dry Scrubbers
- Condensate control/return system

- Vapor recovery system (VRS)
- Organic filtration (activated carbon or equivalent)
- Induction fans / Compressors
- Continuous emissions monitoring systems (CEMs)

6.2.2 Exhaust Mitigation Measures

CMG will limit exhaust emissions during operations by deploying the following procedures:

- All equipment using combustion engines will meet US EPA Tier IV standards (or equivalent) for non-road diesel engines and sulphur reductions in non-road diesel fuel for PM, NO_x, NMHC, and CO as applicable for the engine rating.
- Only low sulphur or ultra-low sulphur fuels will be consumed for operated equipment.
- The TMP will optimize circulation on the site and minimize idling time for heavy equipment and vehicles.

The Tier IV standards impose varying limits on PM, NO_x, NMHC, and CO dependent upon the engine power rating. CSG has committed to utilizing, to the extent practicable, newer construction equipment manufactured after 2008 and preferably after 2014 in order to meet the current exhaust emissions standards. While there are no regulatory requirements in The Bahamas for construction equipment emissions monitoring, CSG and CMG are committed to reducing this impact by incorporating the recommendations of the US EPA and IFC standards.

6.3 MONITORING AND REPORTING

Particulate monitoring (PM) will include measuring levels of PM_{2.5} and PM₁₀ using a handheld monitor (for example, a handheld real-time sensor (light scattering) that can provide instant results. Pre-construction sampling will occur prior to the start of site activities to establish a baseline (compensating for wind and humidity). PM monitoring will occur on a weekly basis during operations until a baseline operational measurement is established (readings consistent to a 90% confidence interval). Monitoring shall be per the following schedule (see Table 8).

Table 9: Air Quality Monitoring

Pollutant	Monitoring Period / Frequency	Method / Location
Sulfur dioxide (SO ₂)	24-hour reading / 1x month	Stack (for boiler)
	10 minute (averaged) / 1x month	Exhaust (for generator)
Nitrogen dioxide (NO ₂)	24-hour reading / 1x month	Stack (for boiler)
		Exhaust (for generator)

	10 minute (averaged) / 1x month	
Particulate Matter PM ₁₀	24-hour reading / 1x week (initially) until baseline for operations is established to demonstrate compliance	Background ambient readings prior to development (1x). Stack (for boiler) Exhaust (for generator)
Particulate Matter PM _{2.5}	24-hour reading / 1x week (initially) until baseline for operations is established to demonstrate compliance and then 1x/year afterwards or if a process change occurs.	Background ambient readings prior to development (1x). Stack (for boiler) Exhaust (for generator)
Ozone	24- hour measurement / 1x week (initially) until a baseline for operations is established to demonstrate compliance and then 1x/year afterwards or if a process change occurs.	Background ambient readings prior to development (1x). Stack (for boiler) Exhaust (for generator)
GHG	CO ₂ emissions to be calculated based on system losses (total) and reported monthly.	Method per software (API recommended methodology). A portable CO ₂ monitor can be used to validate estimates at specific tank vent locations.

All fuel utilized onsite for construction equipment will be monitored to confirm it is low-sulphur and all equipment will be inspected for compliance to the Tier IV standards. Original equipment manufacturer certifications will be required from the vendors. Compliance will be reported in the project logbook and per the yearly reporting with ESMP updates.

6.4 TRAINING

No additional training needs have been identified for this aspect.

6.5 OTHER RESOURCES NEEDED

A portable PM monitor will be required on site and provided by CMG.

6.6 DOCUMENTATION OF COMPLIANCE

Documentation of air quality measurements will be recorded in the activities logbook and reported with the yearly ESMP updates. OEM and fuel compliance records will also be maintained in the project file.

6.7 ROLES AND RESPONSIBILITIES

The CMG EO and PM will be responsible to maintaining compliance to the operations phase air emissions management provisions. CMG will be responsible for managing all air emissions to the standards identified within this ESMP and providing results in annual reports, including stakeholder updates (inclusive of GBPA and funders).

7.0 OPERATIONS PHASE SURFACE WATER QUALITY IMPACTS

7.1 DESCRIPTION OF SURFACE WATER QUALITY IMPACTS

Surface runoff from precipitation, washdown of equipment and surfaces and other sources (pump seal water, cooling water, etc.,) will occur as a result of operations. Surface runoff from industrial sites is typically contaminated by low levels of chemical residues including oil, grease, coolants, grit, phosphorus, nitrogen, and potentially heavy metals (in solid or leached phases). Runoff is often warm by contact with impervious surfaces in the daytime. The uncontrolled discharge of these pollutants is deleterious to the environment, in particular, aquatic systems. In the case of the PRF, there are no adjacent streams, wetlands, springs, karst features (such as sinkholes) or other opportunities for direct or indirect discharge to surface waters. The Basin 3 saltwater inlet is adjacent to the west of the site and direct discharges to this open body of water are prohibited. No development is proposed within fifty feet of the edge of the basin.

7.2 DESCRIPTION OF SURFACE WATER QUALITY MITIGATION MEASURES

In order to minimize the potential for discharge to Basin 3, the project design will include a stormwater pollution prevention plan (SWPPP) that controls the potential for unanticipated releases and disturbances including surface water contamination prevention and control. This includes proper identification and bunding of fuel containers for operations, dedicated unloading/loading areas, treatment of any collected runoff that is contaminated with hydrocarbons and monitoring of all control systems. The civil works engineering design package will include the appropriate stormwater provisions. The SWPP document is primarily related to construction phase activities. The land-based Spill Prevention Control and Countermeasure (SPCC) plan will be developed by the civil engineer to prevent and control spills and discharges to adjacent waterways. Table 10 below provides a list of the recommended best management practices for the PRF given its topography, location and proposed development plan to control surface water impacts during operations. These recommendations will be carried into the final design and are based, in part, on the US EPA National Pollution Discharge Elimination System (NPDES) for Industrial Activities and the (as adopted/modified by the state of Florida). Figure 3 is the current proposed site layout.

The marine-based SPCC will be developed in coordination with training provided by Marittima. Clean Marine Services Group will provide oil spill response training for its personnel at its oil treatment and recycling plant in Freeport. Under the International Maritime Organisation's (IMO) Oil Pollution Preparedness, Response and Cooperation (OPRC) Convention, portside facilities which handle oil are required to maintain oil spill contingency plans. One component of this is to ensure their staff are adequately trained as first responders (OPRC – Level 1). This proposal comprises the provision of training to Nautical Institute standard accreditation to OPRC Level 1 at a suitable location in Freeport.

General recommendations for the control of surface runoff are also provided by the IFC/WBG *General EHS Guidelines*. In order to reduce the need for stormwater treatment, the following principles should be applied:

- Stormwater should be separated from process and sanitary wastewater streams in order to reduce the volume of wastewater to be treated prior to discharge;
- Surface runoff from process areas or potential sources of contamination should be prevented. Where this approach is not practical, runoff from process and storage areas should be segregated from potentially less contaminated runoff;
- Runoff from areas without potential sources of contamination should be minimized (e.g. by minimizing the area of impermeable surfaces) and the peak discharge rate should be reduced (e.g. by using vegetated swales and retention ponds);
- Where stormwater treatment is deemed necessary to protect the quality of receiving water bodies, priority should be given to managing and treating the first flush of stormwater runoff where the majority of potential contaminants tend to be present;
- When water quality criteria allow, stormwater should be managed as a resource, either for groundwater recharge or for meeting water needs at the facility;
- Oil water separators and grease traps should be installed and maintained as appropriate at refueling facilities, workshops, parking areas, fuel storage and containment areas.
- Sludge from stormwater catchments or collection and treatment systems may contain elevated levels of pollutants and should be disposed in compliance with local regulatory requirements, in the absence of which disposal has to be consistent with protection of public health and safety, and conservation and long term sustainability of water and land resources.

Table 10: Components of land-based SPCC to control surface water impacts during operations (to be developed by site engineering firm)

Measure	Description	Responsible Party / Document Reference
SPCC Emergency Notification Plan	Document to be placed for access to all employees and included in induction training.	Detailed reporting requirements to be completed by Environmental Officer (EO) or Facility Manager (FM). US EPA template for Spill Response Notification to be used as a guide. Source: CFR-2019-title40-vol24-part112.
Evacuation Plans	<ul style="list-style-type: none"> • Location of storage facilities and description of hazards • Locations of all alarms and description of system interlocks • Discharge flow directions • Prevailing wind directions • Water currents, tides, or wave conditions • Arrival route of emergency responders • Employee/visitor evacuation route • Alternative evacuation route • Location of response command center • Location of shelter for “shelter in-place” notifications • Transportation route for injured personnel and nearest medical facility • Location 	Development of the Evacuation Plan is the responsibility of CMG (EO and FM) per the ACCIDENT AND INCIDENT REPORTING PROCEDURE (Document ID: CMG-IMS-Q-PR-0012), SPILL PREVENTION AND RESPONSE (Document ID: CMG-IMS-Q-PR-0023) and the HAZARD IDENTIFICATION AND ASSESSMENT PROCEDURE (Document ID: CMG-IMS-Q-PR-0013). Additional recommendations are provided by CFR Ch. I Part 112 and by the U.S. Federal Emergency Management Administration (FEMA) Handbook of Chemical Hazard Analysis Procedures.
Vulnerability Analysis	<ul style="list-style-type: none"> • Location of nearby sensitive communities or facilities (schools, day cares, adult day care facilities, residential areas, etc.) • Location of any sensitive habitats. In the case of the PRF the nearest sensitive 	Vulnerability Analysis is the responsibility of the designer of record (DoR) and may be incorporated into or developed as part of the Process Hazard Analysis (PHA). Relevant CMG documents include SPILL PREVENTION AND RESPONSE

	<p>habitat is the open water of Basin 3.</p> <ul style="list-style-type: none"> Public utilities that could be impacted by a spill. Vulnerability to storm surge, high winds, heavy precipitation, hurricane events. Vulnerability to climate change, sea level rise, heat stress/impacts. Systems vulnerability for leak detection and monitoring, alarms and interlocks. 	<p>(Document ID: CMG-IMS-Q-PR-0023) and HURRICANE PREPAREDNESS (Document ID: CMG-IMS-Q-PR-0024).</p> <p>HURRICANE PREPAREDNESS CMG-IMS-Q-PR-0024</p>
<p>Discharge Scenario Description – the scenario shall include potential releases from various control points and scenarios (from minor to catastrophic).</p>	<p>The scenario shall account for all operations that take place at the facility, including, but not limited to the following:</p> <ul style="list-style-type: none"> Facility maintenance Piping and storage tanks Pumping stations and sumps Vehicle refuelling (if appropriate) Response actions and notifications Disposal Plans 	<p>Leak detection systems to be deployed per the design requirements. CMG to develop preventative maintenance (PM) plans, standard operating procedures (SOPs) for facility operations. Line functional training is the responsibility of CMG. Additional documentation may include updates to stakeholders.</p>
<p>Inspections</p>	<p>System inspection requirements including tanks, piping, supports, controls, containment structures, and third-party inspection requirements to be included.</p>	<p>CMG will be responsible for inspections (EO and FM). The frequency of inspections is to be included in the PM and SOP documentation for each system component.</p>
<p>Resources to be maintained on site.</p>	<p>All materials for spill response, including routine maintenance items such as vehicle drip pads, PIGs, and other spill control kits are to be identified by location and purpose. Major spill response items such as emergency pumps, booms,</p>	<p>Development of the SPCC resources is the responsibility of CMG (EO and FM) per the ACCIDENT AND INCIDENT REPORTING PROCEDURE (Document ID: CMG-IMS-Q-PR-0012), SPILL PREVENTION AND RESPONSE (Document ID: CMG-IMS-Q-PR-0023) and the HAZARD</p>

	lighting, decontamination items, PPE, etc., are also to be identified by location or source.	IDENTIFICATION AND ASSESSMENT PROCEDURE (Document ID: CMG-IMS-Q-PR-0013).
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All hazardous materials brought on site during operations will be accompanied by safety data sheets (SDS). These sheets detail proper handling, storage and disposal techniques for use of hazardous materials as well as proper first aid in case of accidental exposure. All SDS files will be accessible to workers. Their location is included in the basic safety induction training. During construction temporary storage facilities at the project site for hazardous waste will have disposal containers that are covered, made of inflammable material, sealed to prevent leaking, and positioned on an impervious surface as far from any water as possible. Secondary containment for all disposal containers should be 110 per cent of the maximum volume of the container. Temporary storage facilities will be inspected at least once a day by appropriate staff to check for leaky containers. Appropriate spill containment and clean-up equipment will be easily accessible near all waste storage facilities. Disposal of all hazardous waste utilized or generated during operations will occur offsite by a licensed contractor at a licensed facility as per DEHS requirements.

7.3 MONITORING AND REPORTING

Weekly inspections of all SPCC measures and fuel storage features shall be completed and reported on the project activities log. Inspections will also occur within 24 hours of a significant rainfall event (defined as greater than 1 inch a 1-hour period or 2 inches in a 24-hour period). A precipitation gauge will be maintained onsite by the CMG EO. All repair to SPCC measures should occur within 24-hours of their damage. Repair to damaged or poorly functioning devices will be confirmed by the EO.

7.4 TRAINING

Training for SPCC will occur per the requirements described above and in the CMG TRAINING REGISTER / ATTENDANCE FORM (Document ID: CMG-IMS-Q-FM-0008). Training will include marine-based and land-based SPCC requirements, emergency response, and where appropriate, the specific remediation requirements for response personnel.

7.5 OTHER RESOURCES NEEDED

Resources required include all spill response materials, training and third-party service providers for emergency services. These resources are to be documented in the SPCC plan.

7.6 DOCUMENTATION OF COMPLIANCE

The weekly Inspection log (with photos) will provide routine documentation of successful maintenance of all SPCC components. Structural system inspections, leak detection equipment

testing, and lessons learned from drills and exercises will be recorded in the relevant environmental database.

7.7 ROLES AND RESPONSIBILITIES

CMG is responsible for the purchase, deployment and maintenance of all SPCC and related control devices during operations. Development of the SPCC plan is the responsibility of CMG with input from the DoR and stakeholders during the PHA and subsequent reviews. A copy of the SPCC shall be provided to the GBPA for their records.

8.0 OPERATIONS PHASE GROUNDWATER PROTECTION

8.1 GROUNDWATER IMPACTS

Due to the Freeport Harbour Rules, discharges are not generally permitted into Freeport Harbour. Therefore, the treated wastewater will be discharged to a deep well proposed for the site (described below). Treated wastewater from plant processing of slops/bilge water will be treated to a maximum of 10 ppm of oil, before being discharged to the deep well. Levels of total petroleum hydrocarbons will be continuously measured by an in-line monitor. Monthly testing of the discharge will be completed per the methods described in Table 11 below and sent to the local onsite laboratory. This includes the monthly testing of the continuous monitoring system. Recalibration tests will be run every six months with duplicate samples. Additionally, samples will be sent to an independent laboratory for comparison testing every month for the first six months for correlation. Should the instrument results correlate to the laboratory results, the monthly testing could be reduced in frequency to once per year. CMG proposes 10 ppm of total petroleum hydrocarbon (TPH) in water as a discharge limit consistent with the marine discharge limit. This limit is consistent with the demonstrated removal efficiencies of the proposed treatment process.

8.2 GROUNDWATER IMPACT MITIGATION

The levels established for discharge (Table 9) into the deep well are considered protective of human health and aquatic species. Additionally, the discharge will occur at a depth of 600 feet below surface or approximately 590 feet below sea level. The discharge will occur in a limestone layer aquifer well below the sea floor and hundreds of feet below the drinking water lens. No receptors are located at this depth. The calculated discharge rate for the deep well 5 m³ per day. Preliminary geophysical data indicates no concerns with this rate of discharge. Well fracturing will not be required. Groundwater mounding is not a concern due to the confining rock layers above. Dilution of the plume will continue to dissipate the discharges with mixing of saltwater to non-detectable levels most likely within a few hundred feet of the well site. Treated water discharge will not create any thermal impacts as the temperature is expected to be at ambient levels prior to deep well injection. Deep well injection of liquid wastes is considered environmentally safe and practiced in many countries (include The Bahamas and the United States). This impact, assuming discharge limits are maintained is considered Medium. One potential mitigation for this impact is the use of the local, municipal wastewater treatment plant. Given the discharge limits proposed and the available capacity of the local treatment works, the treated wastewater could be discharged to the local public treatment works.

8.3 MONITORING AND REPORTING

The discharge to the deep well will be monitored and controlled through indirect online measurement of oil and grease. If the measurement is above 10 ppm, the discharge valve to the well will close automatically and the water will be directed back to the wastewater treatment plant. Table 11

identifies the other constituents (excluding those continuously monitored), to be tested on a weekly basis and analyzed in the onsite laboratory. Methods provided will be utilized (or equivalent).

Table 11: Monthly monitoring for deep well injection

Constituent	Sample / Laboratory Method	Proposed Discharge Limits (Max Daily)
Oil & Grease	Grab sample from discharge line / APHA 5520 B or equivalent – in addition to continuous monitoring	10 ppm (per IFC)
pH	Calibrated field probe	6.0-9.0 range (per IFC)
Total Suspended Solids (TSS)	Grab sample from discharge line / Standard Method 2540D or equivalent	50 ppm (per IFC) †
Polychlorinated biphenyls (PCBs)	Grab sample from discharge line / Screening level EPA method 505 or equivalent or USEPA Method 508A, or USEPA Method 8082 or other as GCMS as appropriate.	0.0005 ppm*
Metals (US RCRA 8) or equivalent plus aluminum and copper	Grab sample / TCLP or equivalent	Mercury 0.0031 ppm** Aluminum – 0.2 ppm*** Copper – 0.84 ppm**

The onsite monitoring well (drilled into the upper aquifer will be tested on a bi-annual basis for the same parameters as listed in Table 9. Total petroleum hydrocarbons (DRO) will be tested in place of Oil and Grease. PCB and metals analysis may be discontinued after one full year of operations (minimum three sampling events) with below detection limit results.

8.4 TRAINING

No additional training is required for this environmental aspect.

8.5 OTHER RESOURCES NEEDED

Resources required for the project during operations include the sampling equipment (continuous and grab samples), onsite and offsite laboratory facilities.

8.6 DOCUMENTATION OF COMPLIANCE

Documentation of compliance will be demonstrated by the laboratory reports generated by CMG and provided to the relevant regulatory agencies (DEPP) and stakeholders as appropriate.

8.7 ROLES AND RESPONSIBILITIES

The CMG EO will be responsible for maintaining compliance and reporting for the deep well injection and general groundwater protection program.

9.0 OPERATIONS PHASE SOLID WASTE MANAGEMENT

9.1 SOLID WASTE IMPACTS

Solid waste impacts during operations will be managed through the municipal service provided by Sanitation Services Ltd. for garbage collection and disposal at the Pine Ridge Landfill. During construction, scrap materials such as wood, cardboard, plastics, and other solid waste will be recycled to the extent practicable or disposed of at the Pine Ridge Landfill. CMG will ascertain that the recycling and disposal sites are licensed and operated to acceptable standards. Sites found to not meet the minimum standards for compliance will not be utilized. Portable ablution facilities will be required during construction.

9.2 SOLID WASTE IMPACT MITIGATION

Solid sludge waste will be managed through a patented process (immobilization) owned by CMG. Immobilisation combines the sludge with a limestone/soil mix that can be excavated locally. The combined material is then passed through a crusher to homogenise the material to the optimum size prior to being passed through calibrated weighing hoppers where, if deemed necessary according to the specific qualities of the sludge, common Portland cement is added as an additional bonding agent. Once any bonding agent is added, it is then weighed again and its pH value is tested before being introduced through a screw type mixer where a calculated quantity of both inert sodium silicate and fresh water is added into the mixing process. This treatment then produces a hard and inert glassy substance whereby all and any elutable pollutants are locked in for several thousand years. The material produced resembles a fine gravel that once complete and tested on site, will meet Florida EPA Standard 62-777 FAC. This material then becomes a valuable resource for capping disused landfill cells, road building and/or constructing soundproofing barriers at, for example, airports.

The municipal service provided by Sanitation Services Ltd., will be used for garbage collection and disposal at the Pine Ridge Landfill. During construction scrap materials such as wood, cardboard, plastics, and other solid waste will be recycled to the extent practicable, and/or disposed of at the Pine Ridge Landfill. Once the Facility has been commissioned all non-recyclable solid waste will be disposed of using the collection and disposal services of Sanitation Services Ltd.

Spent carbon from the odor control system will either be disposed with Sanitation Services or shipped back to the United States for regeneration.

9.3 MONITORING AND REPORTING

Daily inspections for loose refuse, plastics, food containers, etc., will occur. The EO is responsible for maintaining a record of solid waste management, including manifests, shipping records, disposal records, audits of receiving facilities and onsite good housekeeping practices during operations.

9.4 TRAINING

No additional training is required for this environmental aspect.

9.5 OTHER RESOURCES NEEDED

Resources required for the project during operations for this aspect include waste bins/recycling bins and licenses/insurance along with inspection records for all vendors.

9.6 DOCUMENTATION OF COMPLIANCE

Audits, manifest and inspection logs (with photos) during operations will provide documentation of compliance to the solid waste management requirements. The relevant CMG control document from the IMS is the WASTE MANAGEMENT CONTROL PLAN (Document ID: CMG-IMS-Q-PR-0022).

9.7 ROLES AND RESPONSIBILITIES

CMG is responsible for compliance to the solid waste management requirements during operations. The EO will complete inspections, audits and documentation.

10.0 OPERATIONS PHASE OCCUPATIONAL SAFETY

10.1 DESCRIPTION OF OPERATIONS PHASE OCCUPATIONAL SAFETY IMPACTS

Operations phase occupational safety impacts include traditional employee industrial safety risks such as excessive noise, vibration, slips, trips, and falls, and traffic conflicts and vehicular incidents), exposures to noxious and hazardous chemicals to name a few. Employee safety in the Bahamas is governed by the Health and Safety at Work Act (2002) which closely follows the UK EHS safety requirements. CMG will be responsible for ensuring compliance with all safety requirements during operations, including CMG employees and subcontractors/vendors operating onsite (through a contractual flow-down to vendors/suppliers). Weather can sometimes play a role in operational activities (heat stress, lightning, high winds, etc.). Any on-site safety incident may be significant, or even major (in the case of a worker injury), but these risks are inherent in the industry and minimized by proper training and adherence to regulations and requirements.

10.2 DESCRIPTION OF OPERATIONS PHASE OCCUPATIONAL SAFETY MITIGATION

Mitigation for occupational risks during operations starts with the project design development. The designer of record (DoR) will develop a process hazard analysis (PHA) that is a cross-discipline, multiphase assessment of construction and operational risks associated with the project (inclusive of occupational and environmental aspects). The goal is to identify early in the design process those potential risks that can be “designed out” of the project. The second goal is to minimize risks with appropriate engineering mitigations such as guardrails, equipment guards, process interlocks, alarms, etc. The third and last goal is to define appropriate PPE levels for those workers who may be exposed to residual risks.

To reduce operational risks the pre-work planning process shall include a task specific Job Hazard Analysis (JHA). The JHA relates the specific task to the worker requirements (training and experience), tools, PPE, and environmental considerations (weather, temperature, other adjacent activities, etc). The development of the JHA will follow chemical industry best practices. CMG is developing a number of specific Work Instructions (WI) control documents for the PRF for non-routine tasks. These WIs identify specific PRF related hazards and requirements to complete tasks in a safe and effective manner. Once the JHA has been completed, including reference to the specific WI as applicable, a Safe Work Permit (SWP) will be completed. This document lists the specific workers, tasks, tools, PPE and other precautions (including SDSs and first-aid) for a specific and defined task. The task duration may occur over a short period of time or several days. The SWP will be completed and closed-out upon final inspection by the CMG Safety Representative, EO, or PM. The SWP must be signed by the GC Site Superintendent and CMG representative (authorised to do so). The five-step process safe work execution is as follows:

- 1) Identify defined work elements in the project and site-specific HASP;
- 2) Develop a JHA for each specific job task;
- 3) Obtain a SWP signed by all parties prior to initiation of specific work in the field;

- 4) Review planned work execution with a Toolbox Talk at the start of each workday; and
- 5) Close out SWP with final PM signature after all work is completed, safety protocols completed and removed as needed, and work inspected. Findings and lessons learned to be included on final documentation prior to filing.

Table 4 in Section 2 provides general occupational aspects and references for the PRF. Table 6 identifies a list of the common occupational risks as obtained from the US OSHA using the “fatal four” leading causes of fatalities in the workplace and the top recordable injuries (lost-time) and safety violation notices for the industry. A full industrial hygiene assessment of operational related occupational risks is beyond the scope of this ESMP. Mitigation measures below are provided for information and awareness and are not a comprehensive listing of all potential occupational risks.

Table 12: Top ten occupational risks (by percent lost time injuries)

Occupational Risk	Mitigation Options	Examples / References
FATAL FOUR		
Falls / Working at height	<ul style="list-style-type: none"> • Guardrails • Personal arrest systems • Safety nets • Proper use of portable ladders • Proper use of scaffolds 	The U.S. OSHA Fall Protection Standard (1926.501) and Scaffold Standard (1926.451) are good references. The OSHA ladder safety standard should also be consulted (1926.1053).
Struck By Objects	<ul style="list-style-type: none"> • Use of toe boards and railings • Nail gun safety • Cranes and rigging plans • Wind restrictions 	Refer to OSHA standards for Working at height, as well as the Crane Safety rules (29 CFR Part 1926
Electrocutions	<ul style="list-style-type: none"> • Distance requirements • Isolation • De-energizing and grounding • LO/TO procedures 	OSHA Control of Hazardous Energy standard (1910.147) as reference.
Caught In/Between	<ul style="list-style-type: none"> • Identifying pinch points • LO/TO procedures • Machine guarding requirements for hand tools, drilling rigs, etc. 	OSHA Machine Guarding standard (1910.212).

COMMON INDUSTRIAL ACCIDENTS		
Electrocutions	Only properly trained and qualified electricians can work on energized components. LO/TO will be strictly enforced.	See energized equipment standards.
Explosions or burns	Life-safety standards including portable fire extinguishers, spark arrestors, proper storage and labelling of all flammable compounds will be strictly enforced.	See HAZCOM standards (OSHA 1910.1200) and availability of all SDSs for workers and visitors during construction.
Slips and Falls	Good housekeeping practises to eliminate trips, slips and falls will be followed.	
Machinery accidents	Proper placement of barricades, signage, training, daily equipment inspections, and machine guards.	HAZCOM and Machine guarding standards.
Caught In/Between	Proper placement of barricades, signage, and machine guards. Additional measures include the use of spotters, and supervision.	HAZCOM standards.
Vehicle accidents	Dedicated travel lanes, ingress/egress and signage should be used. Signalling may be required.	See CMG Traffic Management Plan and Safe Driving Policy
Over fatigue / Ergonomic impacts	Proper JHA will account for repetitive stress, manual	JHA and HASP to include specific provisions for the project.

	lifting requirements, anti-fatigue measures, heat stress controls and proper work/rest rotations.	
ADDITIONAL COMMON OPERATIONAL SAFETY PROTOCOLS		
Confined Space	A confined space permit shall be issued prior to entry into any confined space as defined by OSHA or HSE.	Confined spaces in construction are defined by OSHA in 1926, Subpart AA.
Security	Toolbox talks will address employee safety and security from potential workplace violence, theft, bullying, harassment, and other threats or coercion.	CMG workplace policies address these risks and will be flowed down to their respective subcontractors and vendors.
Emergency Preparedness for Hurricanes/storms	<p>Warning notifications to be posted.</p> <p>Muster and evacuation routes identified and included in employee/worker training.</p> <p>Additional materials stored for use during a storm event for securing all temporary structures, lashings, glazing protection, flood controls, and other materials needed to secure the project site.</p>	FEMA references for hurricane protection at construction sites (see: https://www.hopenn.com/prepare-your-construction-sites-for-severe-weather/).

10.3 MONITORING AND REPORTING

Periodic inspections by competent supervisors will be required continuously during operations. Safety inspections will occur generally on a weekly basis by the CMG EO but will be unannounced. Violations of the occupational safety standards will be immediately addressed with the FM. The most common violations are routine and minor (such as not wearing eye or hearing protection) or driving in a non-designated zone. These will be flagged and reported to the FM. Repeated or willful

violations will be cause for contract actions, and dismissal of workers from the site. Safety inspections will be noted in the CMG Inspection Logbook.

10.4 TRAINING

Training needs are dependent upon the specific task, regulatory requirements and assigned individuals. At a minimum, no worker will be permitted to complete a task, operate equipment or oversee work that they are not properly trained and qualified to complete.

In general, the employer must train each affected employee in the manner required in the recognition and avoidance of unsafe conditions applicable to their work environment. The minimum standard is typically a 10-hour training program for workers and a 30-hour training program for supervisors. More specific training requirements are provided for specific tasks, operations and hazardous conditions (see reference). For example, the “Focus Four” on the most common fatalities at construction sites are generally reviewed with workers during a 10-hour training program (see Figure 9). All employees and visitors will be required to attend the mandatory Safety Induction Training (once the facility is operational).

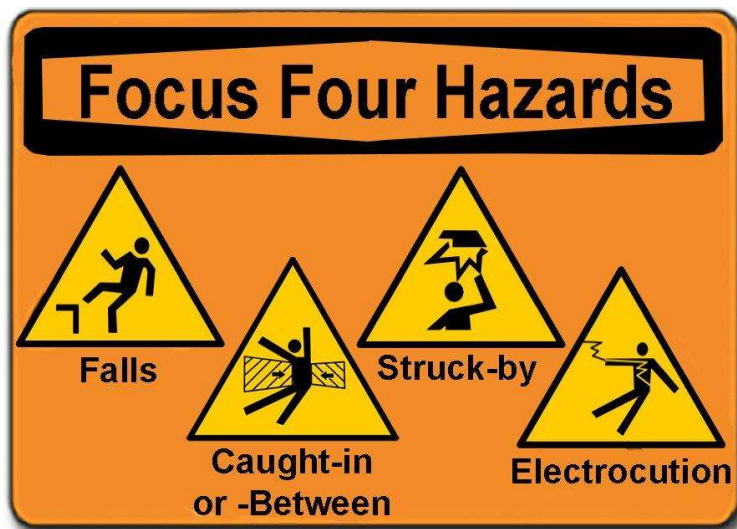


Figure 9: Focus Four OSHA Safety Graphic

10.5 OTHER RESOURCES NEEDED

All safety related equipment, including, but not limited to, machine guards, barriers, signage, PPE, ablution facilities, emergency eye-wash stations, emergency showers, SOPs, Wis, LO/TO locks, Safe Work Permits, drip pads, spill control, caution tape, SDSs, etc., to be provided by CMG at all times.

10.6 DOCUMENTATION OF COMPLIANCE

All daily work activity logs, inspection logs, safety violations, citations, complaints, notices of violation, lost-time injuries and completion inspections (including SWP and other documentation as requested) to be maintained by CMG and provided as appropriate upon request or occurrence.

10.7 ROLES AND RESPONSIBILITIES

The CMG Safety Representative (EO) will be responsible for day-to-day safety protocols, inspections and documentation. Shift supervisors and workers will be responsible for day-to-day compliance. The CMG EO and FM will be responsible for safety inspections, documentation, audits and performance. Safety violations or incidents will be reported by CMG to the GBPA as required.

11.0 OPERATIONS PHASE SOCIO-ECONOMIC IMPACTS

11.1 DESCRIPTION OF IMPACTS

The primary impact (positive) resulting from the operations phase of the CMG PRF is the Increased employment. This is a defined need in The Bahamas, in particular, as a result of the significant job losses brought on by the decline in tourism resulting from the global pandemic which have further exacerbated previous declines resulting from hurricane Dorian. The addition of 20+/- jobs resulting from the operations phase will generate added revenue from employment wages to the local community. While total economic impact as a result of capital investment will be reduced due to the acquisition and fabrication of major equipment overseas, the local expenditures in goods, services, materials, and labour will provide a positive net benefit to the region. The additional benefit of increased training, experience and advancement for local workers is also noted.

The only negative social impacts have been identified as increased traffic and noise as a result of site activities. These are addressed in previous sections of this ESMP.

11.2 DESCRIPTION OF MITIGATION

CMG will promote the positive benefits of this aspect through an emphasis on hiring of local workers to work as facility operators, laboratory technicians, facility maintenance, transportation, and management. CMG will give preference to local vendors/service providers over those that utilize outside (non-Bohemian) resources. All workers shall be paid prevailing wages. All workers (CMG or otherwise) will be covered by the CMG Administrative and Operational Controls Documents as appropriate (see Appendix C).

11.3 MONITORING AND REPORTING

CMG will provide a statement of net economic outcomes for the operations phase that includes capital expenditures, procurement of local goods and services, employment (including full-time and part-time), wages and salaries of workers, benefits and fringe and estimated total economic impact.

11.4 TRAINING

Training for all workers will be provided by CMG as appropriate at no cost to any employee.

11.5 OTHER RESOURCES NEEDED

No additional resources are required for this aspect.

11.6 DOCUMENTATION OF COMPLIANCE

CMG will issue a yearly update/report documenting the socio-economic benefits of the project.

11.7 ROLES AND RESPONSIBILITIES

The CMG PM and Executive Committee will be responsible for review and issuance of the social impact report.

12.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)

CMG has established an Environmental and Social Management System (ESMS) that includes policies, procedures, and personnel responsible for implementing the Project. This section describes the Project-specific ESMS and its component parts including the Environmental and Social Management Plan (ESMP) that has been generated for the Project.

The CMG management system is a set of processes and practices to consistently implement policies to meet the business objectives. The ESMS procedures and continuous improvement process are designed to inform employees of what is required, provide them with resources to meet CMG objectives and to ensure compliance by accountability measures. The management system helps to assess and control risks and is the key to lasting improvement. The ESMS continual improvement – an ongoing process of reviewing, correcting and improving your system will utilize the most common method of Plan-Do-Check-Act cycle (PDCA), described below.

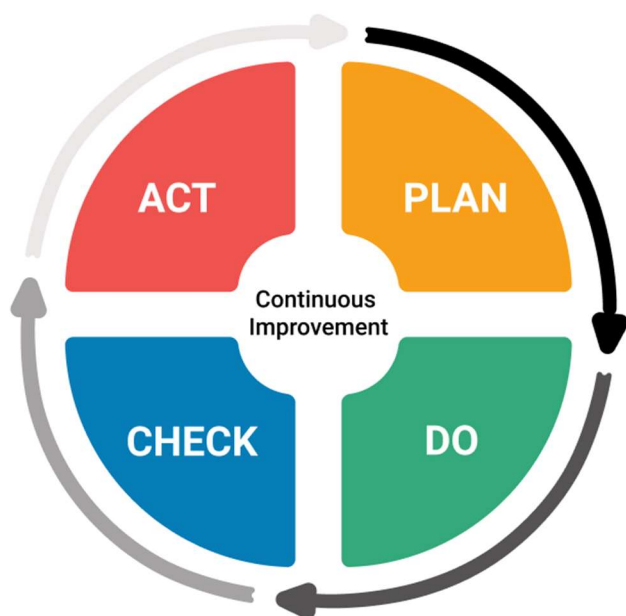


Figure 10: ESMS Strategy graphic (stock image)

The nine components of the CMG ESMS are:

1. Policy
2. Identification of Risks and Impacts
3. Management Programs
4. Organizational Capacity and Competency
5. Emergency Preparedness and Response

6. Stakeholder Engagement
7. External Communications and Grievance Mechanisms
8. Ongoing Reporting to Affected Communities
9. Monitoring and Review

12.1 POLICY

The Clean Marine Group (CMG) Freeport, Bahamas Port Reception Facility (PRF) will strive to meet and exceed wherever practicable all environmental laws and regulations while operating a resource efficient operation that minimizes greenhouse gas (GHG) emissions, the release of pollutants into air, water, and land. It will continually strive for the proper handling and treatment, including recycling and waste minimization, of all hazardous chemicals, hazardous and non-hazardous wastes and the recovery, reuse, treatment, and proper disposal of all generated waste. CMG is also committed to providing a safe, equitable, transparent and non-discriminating workplace for all employees where worker's rights are protected, and compensation and promotions are merit-based.

12.2 IDENTIFICATION OF RISKS AND IMPACTS

CMG will maintain a Risk and Impact Register to track and manage all potential environmental and social risks associated with the project. Appendix B is an Identification of Risks and Impacts utilizing the ESMS Toolkit (IFC) template.

12.3 MANAGEMENT PROGRAMS

The management programs include the ISO Management Certifications and mechanisms and the comprehensive CMG Integrated Management System (IMS), see Appendix C for Master Document List).

12.4 ORGANIZATION CAPACITY AND COMPETENCY

CMG will maintain fully qualified and competent professionals with current knowledge and skills on environmental and social issues, including regulatory requirements and industry best practices. They have also been trained on management system standards. We involve external experts to assist in the identification of risks for complex projects.

12.5 EMERGENCY PREPAREDNESS AND RESPONSE

CMG not only has employees' and contractors' full involvement, we also focus on continued participation and communication with surrounding communities on emergency management planning. External communication channels in case of an emergency are defined. "Off-site" emergency management and "mutual aid" are key features of our emergency plan. The CMG Emergency Preparedness Plan is integrated to the Port Authority Contingency Planning and reviewed on a regular basis.

See also See Section 13.0 of this ESMP and the relevant IMS.

12.5 STAKEHOLDER MANAGEMENT

The stakeholder mapping exercise (in process) has tentatively identified the following organisations/institutions for inclusion in the communication and engagement process.

Table 13: Additional potential stakeholders

CMG Stakeholder Engagement Plan				
Stakeholder	Representative	Concern	Engagement Method	Information Exchange
GBPA	Rico Cargill	Ability to provide services and compliance to approvals/standards.	Regular scheduled meetings and formal submittals.	Technical data submitted and formal responses for Authority.
GBSY	Marvin Basden			
FSS	Jeremy Cafferata			
IDB	Terry-Ann Segree	Execution to and management of ESMP.		
IDB	Mikia Carter	Execution to and management of ESMP.		
Workers	TBD	Transparency of Human Resource policies, EH&S.	Job boards, notices and direct communications.	Details on worker rights, grievance policy, and opportunities.
Residences	TBD	Environmental compliance and emergency preparedness.	TBD	TBD
Customers	TBD	Regulatory compliance.	TBD	TBD
Suppliers	TBD	Supply chain compliance and transparency.	TBD	TBD

Media	TBD	Documentation of public benefit.	Directed communications.	Social Media and Press Releases
Local religious or other cultural institutions.	TBD	Consultation on potential socio-economic risks and opportunities to meet public need.	Directed communications and/or SC assignment.	Social Media and email correspondence.

12.7 EXTERNAL COMMUNICATIONS AND GRIEVANCE MECHANISMS

CMG will utilize a variety of methods for external communications. Formal communications to regulatory authorities will be via signed correspondence (electronic and/or hard copy as required) and where appropriate, email exchange. Notices to the public will be via formal press releases if appropriate, and/or to the dedicated Facebook™ (FB) page for the PRF. The FB page will be monitored for information and posts from stakeholders and other interested parties by the CMG Information Officer.

Grievance mechanisms will include social media monitoring such as the aforementioned FB page. The phone number of the CMG Information Officer will be provided for direction communications. All informal and formal complaints of merit will be addressed. The method will vary by the type and seriousness of the grievance. Minor grievances will be addressed by the PRF Manager or Information Officer whereas more serious complaints will be addressed by senior management. For internal employees, a dedicated 800 number and email address will be provided for anonymous complaints that directly links to the corporate HR representative. Formal complaints will be heard by the local and/or corporate HR representative.

The public, especially neighbouring businesses, must be informed of the mechanism for reporting concerns or problems and this mechanism must be easily accessible and responsive. Options for this mechanism include a telephone hotline, website or contact person. When concerns are communicated, they will be acknowledged within 24 hours and resolved within 48 hours, when feasible. If it is not feasible to resolve a matter within 48 hours, persons will be advised of this and regularly updated on progress in addressing their concerns.

Once operations commence, the public will be advised of instances of inconvenience or disturbance, such as changes to traffic routes and times of excessive noise per the mechanisms described above. Signage will also be utilized on and near the site to advise of things, such as traffic diversions and active construction areas. At least one sign needs to include information about the onsite contractor inclusive of a telephone number and email address for contacting them. Contact information will also

be provided for DEHS, DEPP and Ministry of Works. Notices will also be placed on social media (such as Facebook™ notifying the public of site activities including construction progress.

12.8 ONGOING REPORTING TO AFFECTED COMMUNITIES

The PRF Steering Committee take responsibility for stakeholder communications, reporting and continuous improvement on relationships with all identified stakeholders.

12.9 MONITORING AND REVIEW

The CMG IMS includes the following control documents to manage the ongoing reporting and review of stakeholder engagement activities:

- Internal Audit Report (CMG-IMS-Q-FM-003)
- Customer Feedback Form (CMG-IMS-Q-FM-005)
- Complaints Form (CMG-IMS-Q-FM-0010)

13.0 SUMMARY AND RECOMMENDATIONS

13.1 OPERATIONS PHASE

This ESMP has identified the impacts, mitigation measures, references, and responsible parties for the operations phase of the CMG PRF at the port of Freeport, Grand Bahama Island. The proposed operations, recycling of oil contaminated liquids, by its very nature increases the risk for environmental contamination at the site from uncontrolled releases, while simultaneously reducing this impact by providing a state of the art receiving Facility for these types of wastes streams that are currently not provided in the region. This demonstration of need has documented that the net value of the Facility in reducing marine contamination from ship generated wastes will far exceed the overall low risk of an environmental incident and any resulting contamination that might occur. Furthermore, the Facility will be outfitted with emergency response procedures as outlined in this ESMP to deal with any such release thus lowering the risk even further.

The most appropriate recommendation for any project that proceeds through implementation is that the appropriate recommendations (and legal requirements at a minimum) be adhered to. This can be done by inspections by local competent authorities however, these individuals are often constrained by resources and reliance upon their ability to ensure compliance is not always appropriate. This report recommends a third-party inspector be resourced and periodic, and unannounced inspections occur to confirm adherence to the appropriate standards. These inspections should be part of the operations plans and may take the form of the ISO Certification audits.

Proper and continuous communication is a key component of successful stakeholder engagement. The Steering Committee developed by CMG should continue to communicate project updates, upcoming events that may impact the local community, and good relations with neighbors and adjacent property tenants. A clear and transparent hiring process for workers, opportunities for internal promotions and recognition (especially for achieving safe work goals), and other incentives should be offered. The use of local contractors, suppliers and workers is recommended to provide the optimum economic benefits to the local community.


Appendices

APPENDIX A: CMG RISK REGISTER

Risk Register																																													
Location/Work Area:		Grand Bahama Shipyard – Extended Processing Facility																																											
Environment, Health and Safety																																													
General Reuquirements/Conditions																																													
PPE			Hazard Controls			Specific Training Requirements																																							
Standard Site PPE	✓	Face Shield	o	Emergency Plans	✓	Site Induction	✓	Abrasive Wheels	o																																				
Hearing Protection	✓	Goggles	o	Fire Extinguisher	✓	Forklift qualified	✓	Lifting & Slings	o																																				
Gloves	✓	Safety headwear	✓	Electrical Isolation	✓	Side Loader qualified	o	Manual Handling	✓																																				
Safety Footwear	✓	Apron	o	Lock Out/Tag Out	✓	Combi Lift qualified	o	Slings and chains	o																																				
Hi-vis	✓	Safety Glasses	✓	Traffic Control	✓	Overhead/Jib Crane	o	Emergency reponse	✓																																				
RISK ASSESSMENT		SEVERITY (S)		LIKELIHOOD OF HARM (L)		RISK RATING (R) = S x L		RISK MATRIX																																					
1. Identify and record for each		1 = No Injury		1= Very Unlikely		1 to 6 = Low Risk (L) (Acceptable,		<div style="text-align: center;">Likelihood</div> <table border="1"> <tr> <td></td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>1</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>2</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> </tr> <tr> <td>3</td> <td>3</td> <td>6</td> <td>9</td> <td>12</td> <td>15</td> </tr> <tr> <td>4</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>20</td> </tr> <tr> <td>5</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>25</td> </tr> </table>			1	2	3	4	5	1	1	2	3	4	5	2	2	4	6	8	10	3	3	6	9	12	15	4	4	8	12	16	20	5	5	10	15	20	25
	1	2	3	4	5																																								
1	1	2	3	4	5																																								
2	2	4	6	8	10																																								
3	3	6	9	12	15																																								
4	4	8	12	16	20																																								
5	5	10	15	20	25																																								
2. Identify and record the control		2 = Minor Injury		2 = Unlikely		8 to 12 = Medium Risk (M)																																							
		3 = Lost time Injury		3 = Likely		>12 = High Risk (H) Unacceptable																																							
		4 = Major Injury		4 = Very Likely																																									
		5 = Death or Permanent Disability		5 = Certain																																									
		<p style="text-align: center;">NOTE: If after risk evaluation and with all the necessary controls in place; the risk rating (R) is HIGH, the HS&E department are to be contacted for guidance on the task/process.</p>																																											
HAZARDS (typical listings)			RISK CONTROLS (typical listings)																																										
<ul style="list-style-type: none"> - Entanglement - Crushing - Cutting / Stabbing/ - Striking - Slipping / Tripping - Falling - Shearing - Friction - High Pressure Fluid - Electrical - Chemicals 			<ul style="list-style-type: none"> - Ergonomic - Suffocation - Explosion - Biological - High Temperature or Fire - Noxious Fumes - Environment - Dust - Noise - Vibration - Weather - Radiation (UV) 			ELIMINATION – (specify how) SUBSTITUTION – (plant or substances with lesser risk levels – specify) ENGINEERING <ul style="list-style-type: none"> - Guarding - Presence sensing - Residual Current Device - Containment - Earth straps - Plant & Equipment 		<ul style="list-style-type: none"> - Lighting - Ventilation - Lifting devices (attachments) ISOLATION <ul style="list-style-type: none"> - Barricades - Cones - Bollards – Screens - Operator Only Area - Loading Exclusion Zone - Observer / Spotter 		ADMINISTRATION <ul style="list-style-type: none"> -Traffic Management Plan - Area - Training - Certification of Operators - Competency Assessments - Plant and equipment maintenance - Exclusion Zones - Supervision - Plant & Equipment Suitability - COSHH Assessment - Risk Assessment 		<ul style="list-style-type: none"> - Toolbox Talk - Emergency Procedures - Signage - SSoW - Workplace Inspections and housekeeping - Observer / Spotter - Atmospheric Testing - Calibration of equip. PERSONAL PROTECTIVE <ul style="list-style-type: none"> - Standard Site - Task Specific 																																	

Document No. CMG-GBS-O-RP-0001

1	Revised to include hurricane risks	TD	21.05.21	AH	21.05.21	TD	21.05.21
0	Issued for Use	CP	12.03.21	TD	15.03.21	TD	15.03.21
B	Updated with GBSL and ASOF comments	CP	25.02.21	TD	26.02.21		
A	Issued for comments	TD	15.01.21				
Rev	Reason for Issue	Prepared	Date	Reviewed	Date	Appr	Date

Activity/Plant/Materials	Hazards Identified	Personnel at Risk	Severity	Likelihood	Risk Rating	Risk Control	Control Methods	Severity	Likelihood	Risk Rating	Residual Risks
Personnel											
Working hours	Fatigue Weather/Heat stroke	Operators	5	2	 10	Risk assessment	Management mandated working hours. Provide shade to operator areas especially control panel. Drinking water to be available and taken during regular short breaks during hot periods.	5	1	 5	Overtime required due to waste receipt storage reaching full capacity
Working alone	Safety Emergency response	Operators	5	3	 15	Risk assessment	Management mandated minimum personnel during operations	5	1	 5	
Facilities	Hygiene Comfort	Operators	3	2	 6	Workplace inspections and housekeeping	Cleaning department regularly clean ablutions. Daily checks include housekeeping walk	3	2	 6	
Site access	Emergency response Emergency exit Unauthorised access	All	5	3	 15	Traffic management plan	Emergency response procedure details routes to be kept clear at all times.	5	1	 5	
Lighting	Fatigue Inadequate visibility	Operators	4	3	 12	Plant and equipment	Sufficient lighting is provided in the area with mobile lighting towers. Should these not be available or working correctly, then operations will stop.	4	1	 4	
Covid											
Pre-existing conditions	Higher risk/higher severity of symtoms	All	5	4	 20	Employee background checks	Operations personnel to provide health history and details of any pre-existing conditions which may affect them.	4	2	 8	Unknown pre-existing conditions
HMI/Control panel surfaces	Contact surface	All	4	5	 20	Workplace inspections and housekeeping Operator only area	Operators to clean surfaces before each days operations	4	2	 8	
Visitors	Airbourne Contact surface	All	4	5	 20	Workplace inspections and housekeeping	Masks to be worn at all times. Santizer to be made available on site	4	1	 4	
Deliveries/collections	Airbourne Contact surface	All	4	5	 20	Workplace inspections and housekeeping Loading exclusion zone	Masks to be worn at all times. Santizer to be made available on site	4	1	 4	
Facilities	Contact surface	All	3	2	 6	Workplace inspections and housekeeping		3	2	 6	
Mechanical											
Tricanter access	Working at height Dropped objects	Operators	4	5	 20	Risk assessment Operator only area	Working at height training and risk assessment Operator only Correct PPE Handrail kickplate	4	2	 8	
Mixing tank access	Working at height Dropped objects	Operators	4	5	 20	Risk assessment Operator only area	Working at height risk assessment Operator only Correct PPE	4	2	 8	
Rotating equipment	Vibration Noise Entanglement	Operators	4	4	 16	Barricades	Mechanical guards Correct PPE Coveralls with no loose clothing	4	1	 4	
Compressed air/compressor	Vibration Noise High pressure Stored energy	Operators	4	4	 16	Barricades	Mechanical guards Correct PPE Coveralls with no loose clothing Regular maintenance and inspection	4	1	 4	
Nitrogen bottle rack	High pressure Stored energy	Operators	4	4	 16	Barricades	Mechanical guards Correct PPE Mechanical fixing (chains)	4	1	 4	
Tank inspection	Confined space entry	Operators	4	3	 12	Administration	Tank inspections will only be carried out by GBSY personnel	4	0	 0	
Equipment bunding	Trips/slips	All	3	4	 12	Traffic management plan	Site layout to ensure hoses/cables are routed in areas of low or no foot traffic Barriers to be placed to stop traffic Steps to be placed over those in traffic areas	3	2	 6	
Pipe racks - ground	Trips/slips	All	3	4	 12	Traffic management plan Barricades	Site layout to ensure hoses/cables are routed in areas of low or no foot traffic Barriers to be placed to stop traffic Steps to be placed over those in traffic areas	3	2	 6	
Pipe racks - overhead	Striking	All	3	4	 12	Traffic management plan Barricades	Site layout to ensure walk ways have no overhead hazarrds Correct PPE	3	1	 3	

Activity/Plant/Materials	Hazards Identified	Personnel at Risk	Severity	Likelihood	Risk Rating	Risk Control	Control Methods	Severity	Likelihood	Risk Rating	Residual Risks
Boiler container	Confined space entry Hot piping	Operators	4	3	● 12	Risk assessment Entry barrier	Doors to be lashed open during operations Correct PPE	4	2	● 8	
Gantry crane	Dropped object	All	4	3	● 12	Administration	No gantry crane required. A forklift will be used when required to service the disc stack centrifuge	4	0	● 0	Forklist lifting operations to be carried out Correct attachment to be used
Electrical											
Control panel	Electrical	Operators	3	4	● 12	Operator only area	Control panel is manned at all times Control panel is locked when shutdown	3	2	● 6	Generator panel to also be locked when no operations
Site power	Electrical	All	5	4	● 20	Guarding Earth straps	Power will be isolated when not operating	5	2	● 10	
Cables/leads	Electrical Entanglement	All	4	4	● 16	Traffic management plan Barricades	Site layout to ensure hoses/cables are routed in areas of low or no foot traffic Barriers to be placed to stop traffic Steps to be placed over those in traffic areas	4	2	● 8	
Mobile plant											
Passenger vehicles	Striking Emergency access	All	3	4	● 12	Traffic management plan	Vehicles to be parked on the northern side of WTP	3	2	● 6	
Forklifts -solids skips movement	Striking Emergency access	All	3	4	● 12	Traffic management plan Competency assessment	Forklift route to be along less traffic eastern side of site	3	2	● 6	
Manual handling -sludge transfer -separator maintenance -solids skip movement	Ergonomics Cuts Dropped objects	Operators	4	5	● 20	Risk assessment Plant and equipment	Correct PPE No manual handling of items over 20kg	4	2	● 8	
Fluids											
Chemicals - polymer - demulsifier	Skin irritation Inhalation Fire/explosion	All	4	4	● 16	Risk assessment Exclusion zones	Correct PPE Safe handling training Safety shower and eyewash facility available	4	2	● 8	
Refuelling - diesel tank - forklift	Leaks/Spills Fire/explosion Chemicals	Operators	3	5	● 15	Risk assessment Exclusion zones	Refueling is by GBSY No smoking policy Equipment to be shutdown during refueling	3	2	● 6	
Waste transfer to reception tank - tanker to reception tank - ISO tank to ISO tank - ISO/Frac tank to ISO/Frac tank	Slips/Trips Leaks/Spills Fire/explosion Chemicals	Operators	3	5	● 15	Traffic management plan Barricades	Correct PPE Housekeeping to ensure any spills are cleaned up			● 0	
Steam piping	Heat Steam leak	All	4	4	● 16	Traffic management plan Barricades	Correct PPE Barricades and signs indicating hot piping	4	2	● 8	
Overflow of tanks/bins	Slips/trips	All	3	5	● 15	Training Containment	Spill equipment available on site Instruments for automatic shutdown of pumps	3	2	● 6	
Hurricane											
Tanks	Leaks/Spills Fire/explosion Impact/Mechanical	Personnel Equipment	5	5	● 25	Hurricane planning, preparation EWI. 20 Hurricane Plan (GBSL) CMG-GBS-O-PR-0010 (CMG)	Enclosed tanks to remain full with all valves closed Open tanks should be drained and secured	2	5	● 10	Damage to equipment from flying debris
Pumps	Impact/Mechanical	Equipment	5	5	● 25	Hurricane planning, preparation EWI. 20 Hurricane Plan (GBSL) CMG-GBS-O-PR-0010 (CMG)	Pumps to be lashed together and hoses to remain in place to provide additional security against individual pumps being a hazard	2	4	● 8	Damage to equipment from flying debris
Chemicals	Leaks/Spills Fire/explosion	Personnel Equipment	5	5	● 25	Hurricane planning, preparation EWI. 20 Hurricane Plan (GBSL) CMG-GBS-O-PR-0010 (CMG)	Remove chemicals to warehouse building	4	2	● 8	

APPENDIX B: BASELINE NOISE SURVEY (CMG)



MARPOL Annex I Oil and Oily Waste Port Reception Facility

Baseline Noise Report

Document No. CMG-BA3-H-RP-0002

0	27.02.2021	TD	AH	TD	Issued for Use
A	22.02.2021	TD	JW		Issued for Review
Revision	Date	Prepared	Reviewed	Approved	Issued Status

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	MARPOL Annex I Oil and Oily Waste Port Reception Facility	
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Executive Summary

Clean Marine Group (CMG) are constructing a MARPOL Port Reception Facility (PRF) in Freeport, Grand Bahama. An Environmental Impact Assessment (EIA) has been completed and approved. This baseline noise study will provide CMG with data which can be used to compare with that measured during the later phases of the project. The site of the facility is located within an industrial area where companies such as Freeport Container Terminal, Bahama Rock and Cemex are currently operating. These companies are operating 24hours per day, 7 days per week.

Measurements were taken on the proposed site and two of the nearest local communities, namely Queen's Cove and Eight Mile Rock. Due to the 24hour operation of the industrial area, the sampling included a night-time reading. Although it is not planned for CMG to undertake construction during the night, it was prudent to ensure that baseline data is available to CMG.

There are currently no regulations for noise limits issued by the Grand Bahama Port Authority nor Bahamian legislation. This report has benchmarked the results against European and World Bank limits. The baseline sound power levels measured at each of the locations are within the recommended limits for industrial and residential areas. The sound power level during construction and operation should be monitored to ensure that the noise levels do not exceed these limits. Monitoring is essential during these phases to allow CMG to take mitigation actions to reduce the noise should the allowable limits be exceeded.

Tien Do

FIEAust, CPEng, NER, APEC Engineer, IntPE(Aus)

1 Introduction

Clean Marine Group are constructing a MARPOL Annex I Oil and Oily Waste Port Reception Facility (PRF) in Freeport, Grand Bahama. As part of the Environmental Impact Assessment (EIA), a baseline noise study is required to ensure that the facility construction and operations do not adversely impact the area. This report documents the existing ambient noise level and the predicted noise levels for construction and operation phases. The area for the new PRF is shown in Figure 1. Three locations within the lease area are used to measure the baseline ambient noise levels.

2 Brief Project Description

Clean Marine Group (CMG) are building a Port Reception Facility (PRF) on Grand Bahama to process MARPOL Annex1 oil and oily waste. The PRF will be constructed on reclaimed land within the Freeport Harbor precinct. Waste oil will be received from trucks to the facility for processing. The waste processed will produce merchantable oil and re-usable water which will be made available to other Freeport companies and users. The re-processed water will be provided in various grades which will allow optimal use of this limited resource.

The site location for the CMG facility is located on the western side of Freeport Harbour on Parcel 2 of Basin 3 (Figure 1). The site more specifically is to the west of the Freeport Container Port offices and encompasses 4.12 acres. This site is zoned heavy industry by the Grand Bahama Port Authority's Freeport Land Use Masterplan. Therefore, this development suits the current zoning designation. The survey drawing for the site is presented as Figure 2 in the Figures section of the report.

The CMG property is bounded to the east by the Freeport Container Port office building and parking lot. To the west Basin 3, to the south Parcel 4 (vacant land owned by Freeport Harbour Company) and to the north Parcel 3 vacant land.

The photograph below shows the location of the proposed Clean Marine MARPOL treatment plant.



Figure 1: Plot Location

3 Terminology

3.1 Abbreviations

dB(A)	A weighted sound power level
dB(C)	C weighted sound power level
SPL	sound power level
L_{eq}	equivalent sound power level
L_{Aeq}	A weighted L_{eq}
L_{max}	maximum sound level recorded during the measurement period
L_{Cpeak}	C weighed peak sound power level
TWA	Time weighted average of a worker's daily exposure to occupational noise
Dose	total noise exposure during a worker's daily shift

3.2 Data Analysis and Criteria

For environmental noise studies, noise levels are typically described using A-weighted equivalent noise levels, L_{Aeq} , during a certain time period. The L_{eq} metric is useful because it uses a single number, similar to an average, to describe the constantly fluctuating instantaneous noise levels at a receptor location during a period of time, and accounts for all of the noises and quiet periods that occur during that time period. The L_{max} metric denotes the maximum instantaneous sound level recorded during a measurement period.

C-weighting, or C-weighted decibels (dB(C)), gives equal emphasis to sounds of most frequencies. This dB(C) scale is generally used to describe low frequency noise, such as the “rumble” of large fans and the “boom” of blasting. Because A-weighting underestimates the human annoyance caused by these types of low frequency sounds, C-weighting is used to assess disturbance due to low frequency sounds. Large amplitude impulsive sounds, such as blasting, are commonly defined using the unweighted instantaneous peak noise level, L_{Cpeak} , and reported as Lpk dB(C).

There are currently no published noise requirements from the Grand Bahama Port Authority (GBPA) thus World Bank EHS standards will be used to determine the limits. These are indicated below. These limits align with European CE directives which stipulate 70dB(A) for machinery noise. CMG will aim to design the facility to achieve these limits.

Table 1.7.1- Noise Level Guidelines ⁵⁴		
Receptor	One Hour L_{Aeq} (dB(A))	
	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Residential; institutional; educational ⁵⁵	55	45
Industrial; commercial	70	70

Figure 2: World Bank Limits¹

4 Noise Measurement Methodology

The noise samples were taken at various times of the day over a period of 7 days. The sound pressure levels were observed to be steady without much variations except aircraft or the infrequent car traffic. These are noted in the measurements and evident in the results for L_{max} . Therefore the readings were taken over a 1 minute period.

4.1 Location Selection

Three locations are selected for the study. These represent the areas of importance during the construction and operation. Only three locations were selected given consideration of the size of the plot and also the shape of the plot.

Location1 is near the northern boundary of the lease area. This is the proposed location of the future office and closest to the current Bahama Rock limestone conveyor loading system.

Location2 is on the east boundary which is closest to the container terminal. Although this is on the boundary, the terminal has a large storage of containers which in effect shields the plot area against the cranes and ships on the other side of the container terminal. The location is also the site of the proposed processing plant.

Location3 is on the southern boundary of the plot area. This is also the proposed location of the tank farm hence lower noise expected from this area from our operations. Any noise will likely be from the container terminal and ships entering and leaving Basin3.

Location 4 is Eight Mile Rock community. This area is still very active and a gateway to the other communities on the West of the island.

Location 5 is Queen's Cover community. This community was devastated by Hurricane Dorian and has not recovered significantly. There are a handful of occupied residences only.

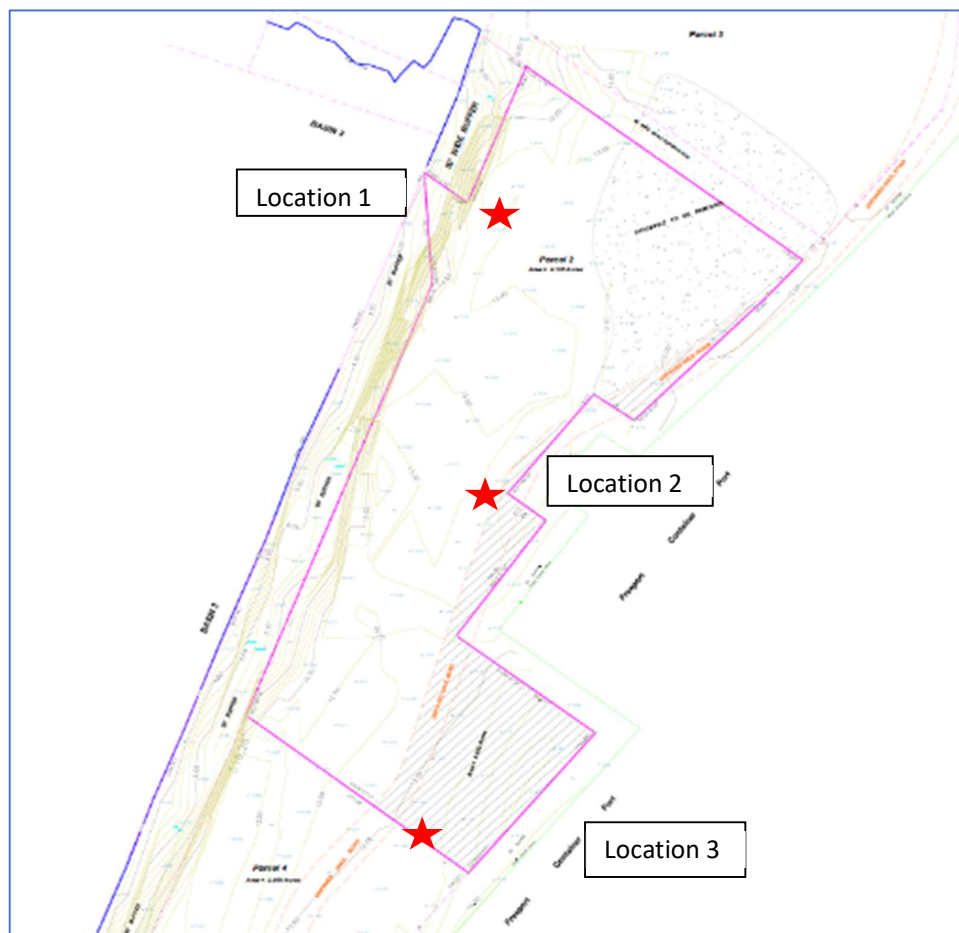


Figure 3: Lease area locations



Figure 4: Residential Locations



Figure 5: Location 1 looking SSE to container terminal



Figure 6: Location 2 looking over the container terminal fence



Figure 7: Location 4 ENE towards CMG plot



Figure 8: Location 5 looking SW towards CMG plot

4.2 Measurement

The measurement was taken with an iPhone11 using the National Institute for Occupational Safety and Health (NIOSH) app. This app has been developed by NIOSH to promote awareness of noise in workplaces and allow employees to make informed decisions about their noise environment and whether they needed to make changes to protect their hearing. The app has been tested and validated at the NIOSH acoustics lab with results indicating that the app is accurate to within $\pm 2\text{dBA}$. Other key features² of the app include:

- Developed by experienced acoustics engineers and hearing loss experts.
- Meets Type 2 requirements of IEC 61672:3 SLM standard when used w/ external microphone.
- Provides the most relevant metrics found in professional sound instruments today. Averages such as L_{Aeq} and TWA, Max and Peak Levels, Noise Dose and Projected Dose according to NIOSH and OSHA standards, and all three major weighting networks (A, C, and Z).
- Capability to calibrate either internal or external microphone. Reporting and Sharing data.
- Up-to-date informational screens on what noises are considered hazardous, how to conduct a noise measurement, how to properly select a hearing protector, and guidelines for preventing hearing loss.
- Technical support available directly from NIOSH hearing experts.

The measurements were taken with the iPhone internal microphone.

4.3 Existing Noise Environment

The site is located in an industrial area on reclaimed land. The nearest urban area is Eight Mile Rock town across Basin3 and approximately 1.5km in a direct line. The other urban area is Queens Cove which is approximately 2.5km in a direct line to the North East. Although these areas are sparsely populated, baseline noise measurements will be taken at these locations and indicated by Figure 4: Residential Locations. Basin3 is currently occupied by Cemex and Bahama Rock to the western side of Basin3 and the Freeport Container port directly to the west and sharing a boundary (with 30' buffer) with the CMG lease area. The container port ship wharf is on the other side and usually has a "wall" of containers stacked between the ships and CMG plot. This reduces the noise from the ships and cranes used to unload and move the containers. The site is close to the flight path of runway 06 of Freeport Grand

Bahama International Airport (IATA FPO) however these are not considered in the analysis. This is noted as highly intrusive noise in the World Bank guidelines and should not be considered in background noise levels. The Bahama Rock operations include bulk carrier loading via conveyor system and this has been included in the analysis.



Figure 9: Bahama Rock bulk carrier being loaded by conveyor



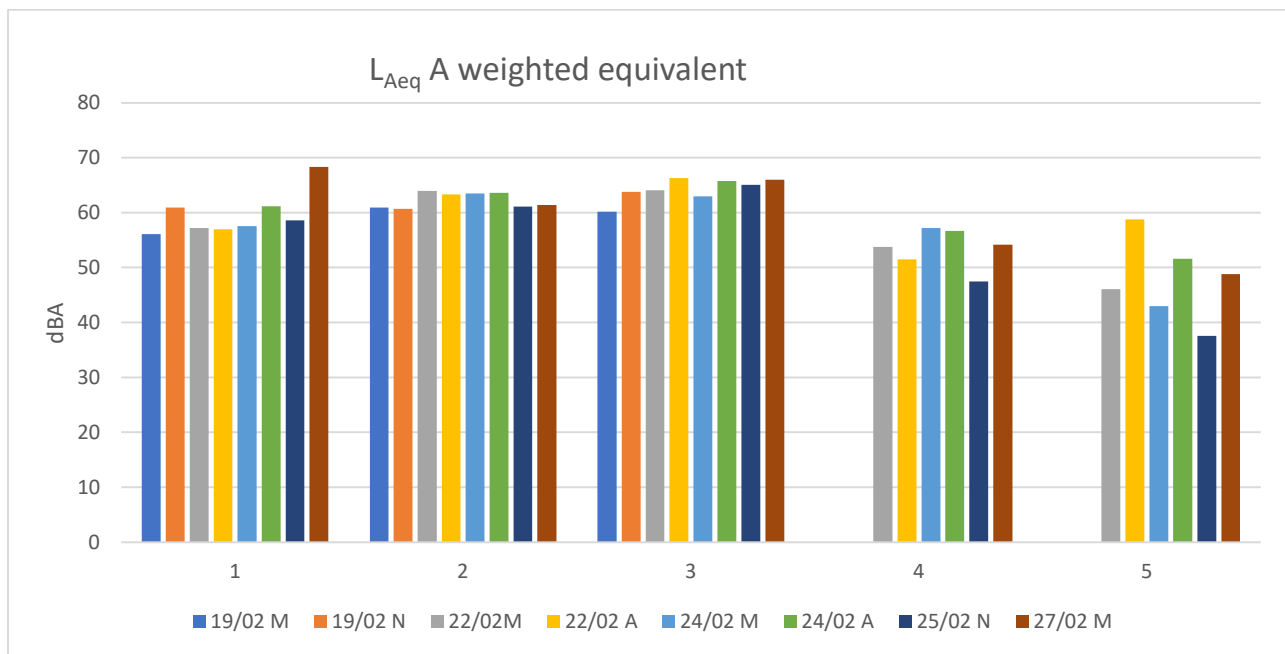
Figure 10: Night-time measurement at Location1

5 Results

Readings are taken generally in the morning (M), midday (N) or afternoon (A). One reading during the evening (E) was taken should construction or operations be undertaken at night. No measurements are taken during periods of rain or high wind which would increase the baseline noise readings. Notes are included with the measurements detailing any unusual activity during the measurement such as vehicles or aircraft. The average shown in the table below does not include the night result.

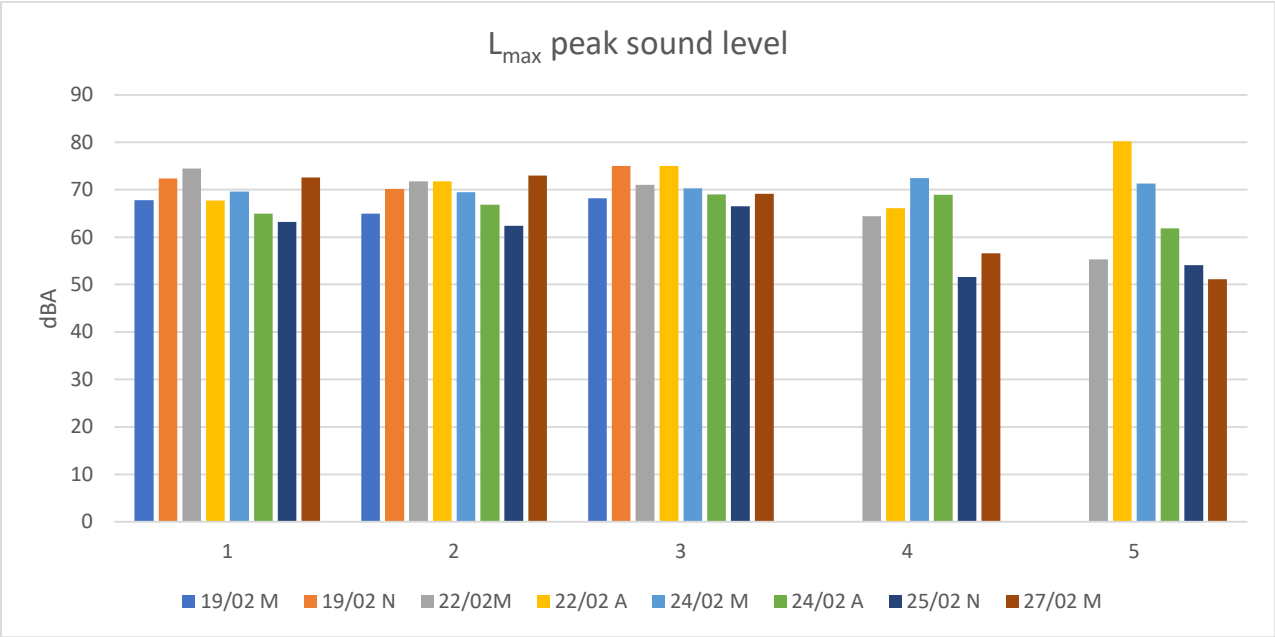
5.1 L_{Aeq} A weighted equivalent

Location	19/02 M	19/02 N	22/02M	22/02 A	24/02 M	24/02 A	25/02 E	26/02 M	Average
1	56.1	60.9	57.2	57.0	57.6	61.2	58.6	68.3	59.2
2	60.9	60.7	64.0	63.3	63.5	63.6	61.1	61.4	57.7
3	60.2	63.8	64.1	66.3	63.0	65.8	65.1	66.0	60.6
4			53.8	51.5	57.2	56.7	47.5	54.2	54.5
5			46.1	58.8	43.0	51.6	37.6	48.8	49.3



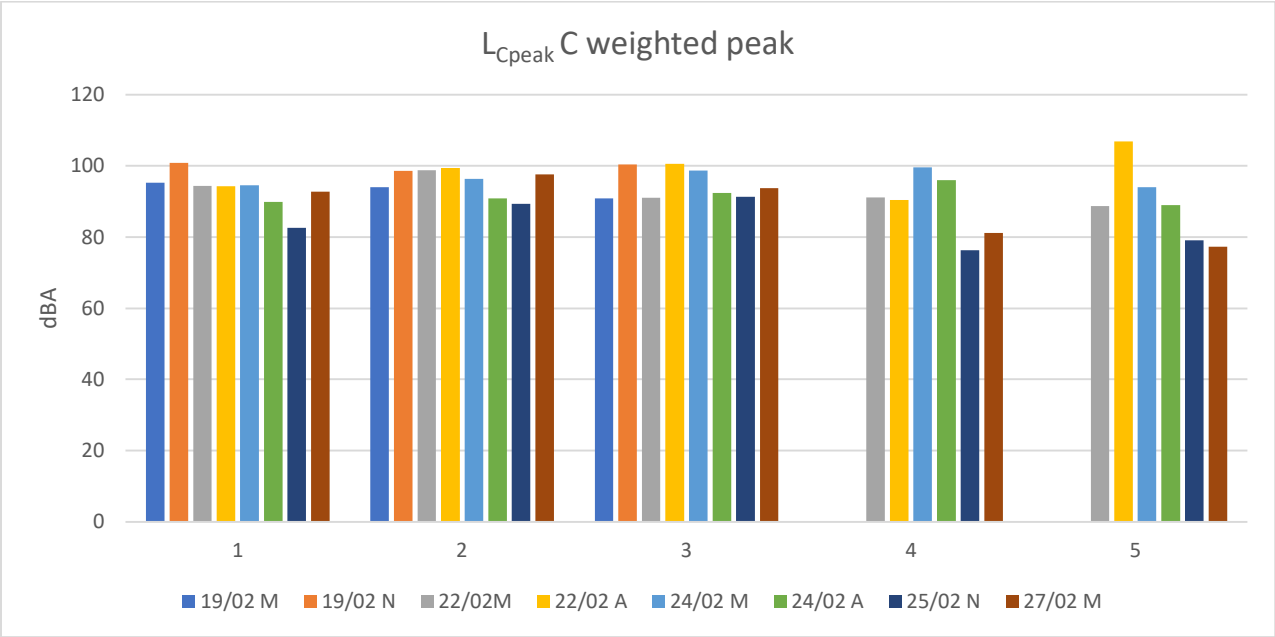
5.2 L_{Cpeak} C weighted peak

Location	19/02 M	19/02 N	22/02M	22/02 A	24/02 M	24/02 A	25/02 E	26/02 M	Average
1	95.3	100.9	94.4	94.3	94.5	89.9	82.6	92.8	87.1
2	94.0	98.6	98.8	99.4	96.3	90.9	89.3	97.6	90.2
3	90.9	100.4	91.1	100.5	98.7	92.4	91.3	93.8	88.1
4			91.2	90.4	99.6	96.0	76.3	81.2	87.8
5			88.7	106.9	94.0	89.0	79.1	77.3	86.0



5.3 L_{max} peak sound level

Location	19/02 M	19/02 N	22/02M	22/02 A	24/02 M	24/02 A	25/02 E	26/02 M	Average
1	67.8	72.4	74.5	67.7	69.6	64.9	63.2	72.6	66.2
2	64.9	70.1	71.8	71.8	69.5	66.8	62.4	73.0	66.3
3	68.2	75.0	71.0	75.0	70.3	69.0	66.5	69.1	65.4
4			64.4	66.1	72.5	68.9	51.6	56.6	62.3
5			55.3	80.2	71.3	61.9	54.1	51.1	59.1



6 Predicted Noise Levels

6.1 Construction

The noise during construction will be expected in two main phases. The first phase being heavy machinery to complete the civil works. This is expected to be minimal as the site topographical survey has indicated a variation of less than 2" over 90% of the area with a drop-off of 7" along the western boundary to the water buffer zone. Two deep wells will be drilled with the location yet to be determined however these are small bore wells which is expected to be completed within a few days. More details and monitoring will be conducted during the drilling operations.

The second phase will be the construction of the tanks, process building and office building. The noise from these activities is expected to be within normal noise limits with the main noise from heavy machinery (trucks delivery equipment and lifting cranes). It is suggested that these activities are not scheduled during the night-time hours (2000hrs-0700hrs) should any work be scheduled during these times. Monitoring will be conducted regularly during this phase.

6.2 Operation

The facility will be designed to house the processing equipment inside a plant building. This building will be secondary attenuation of the noise from the rotating equipment and process piping. The primary attenuation will be the design of the equipment to meet 75dBA maximum by way of local treatment to individual machines. The sound level outside of the building will be less than 70dBA.

Noise from tanker truck movements delivering waste to and removing re-processed oil will be infrequent. The number of tanker movements will be much less than the number of trucks hauling containers from and to the container port.

7 Conclusions

The study has taken measurements during a 7-day period and the results in section 5.0 indicate that the L_{Aeq} does not exceed 65dBA within the industrial area. The noise levels are consistent with the movements of cranes and ships in the container terminal and Bahama Rock loading operations. The night-time noise confirms that there is lower levels measured in the residential areas however the levels recorded in the plot area (Locations 1-3) does not significantly drop due to the 24hour operation of the container terminal and Bahama Rock. The L_{Apeak} is much below the general accepted limits of 110dBA.

The residential area is within the acceptable limits of 55dBA and the locations are the closest to the industrial area. Noise levels measured are affected more due to local traffic than background noise from the industrial area which account for the peaks in the measurement.

It is recommended that a comparison be conducted with a calibrated sound level meter to confirm the NIOSH study for the specific device used with the software. This should be done at the earliest and not later than the commencement of construction.

8 References

1. International Finance Corporation, World Bank Group
General EHS Guidelines: Environmental Noise Management
April 30, 2017
2. <https://www.cdc.gov/niosh/topics/noise/app.html>
NIOSH Sound Level Meter App
Including referenced Publications and Studies

Appendix 1 – Weather during the study period



Figure 11: Friday 19th February Morning



Figure 12: Monday 22nd February Morning



Figure 13: Wednesday 24th February morning

Appendix 2 – Data Measurement Typical Output



Noise measurement report

Date: 19/02/2021, 08:49

Operator: Tien Do

Place: Basin3, Location1

Measurement results

Measurement time (hh:mm:ss)	00:01:00
LAeq	56.1 dB
LCpeak	95.3 dB
Max. level	67.8 dB
TWA	dB
Dose	%
Projected dose	%

Notes

Cranes operating at container port along with forklifts

APPENDIX C: IMS MASTER DOCUMENT RECORD INDEX

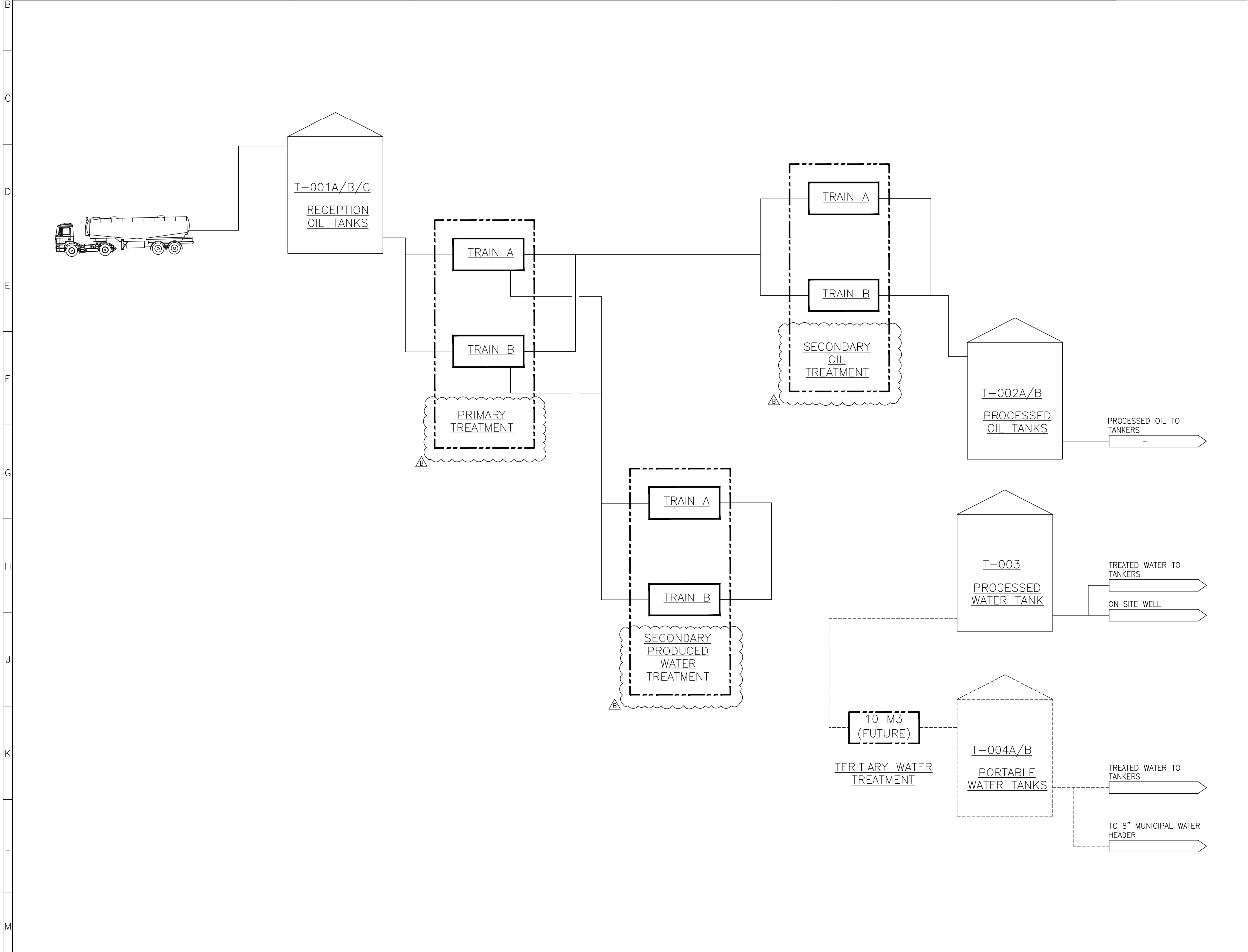
Master Document & Record Index
CMG-IMS-Q-FM-0001

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APPENDIX D: PFD

	1	2	3	4	5	6	7	8	9	10	11	12			
ITEM NO.	T-001A/B/C		Z-101A/B		Z-102A/B		T-002 A/B		Z-103A/B		T-003	Z-104 (NOTE 2)	T-004A/B		
SERVICE	RECEPTION OIL TANKS		PRIMARY TREATMENT PACKAGE		SECONDARY OIL TREATMENT PACKAGE		PROCESSED OIL STORAGE TANK		SECONDARY WATER TREATMENT PACKAGE		PROCESSED WATER STORAGE TANK		TERTIARY WATER TREATMENT PACKAGE	PORTABLE WATER STORAGE TANKS	
DESIGN PRESSURE	barg	ATM	FV / 10 (VTC)		FV / 10 (VTC)		ATM		FV / 10 (VTC)		ATM		FV / 10 (VTC)		ATM
DESIGN TEMPERATURE (MIN/MAX)	°C	0 / 65	0 / 65		0 / 65		0 / 65		0 / 65		0 / 65		0 / 65		0 / 65
OPERATING PRESSURE	barg	ATM	VTC		VTC		ATM		VTC		ATM		VTC		ATM
OPERATING TEMPERATURE (MIN/MAX)	°C	21 / 35	21 / 35		21 / 35		21 / 35		21 / 35		21 / 35		21 / 35		21 / 35
CAPACITY	2000 M3 (EACH)		10 M3/HR (PER TRAIN)		10 M3/HR (PER TRAIN)		2000 M3 (EACH)		5 M3/HR (PER TRAIN)		1000 M3 (EACH)		10 M3/HR		1000 M3 (EACH)
DIMENSION (OD X T/T)	50' X 36'		VTA		VTA		50' X 36'		VTA		36' X 36'		VTA		36' X 36'

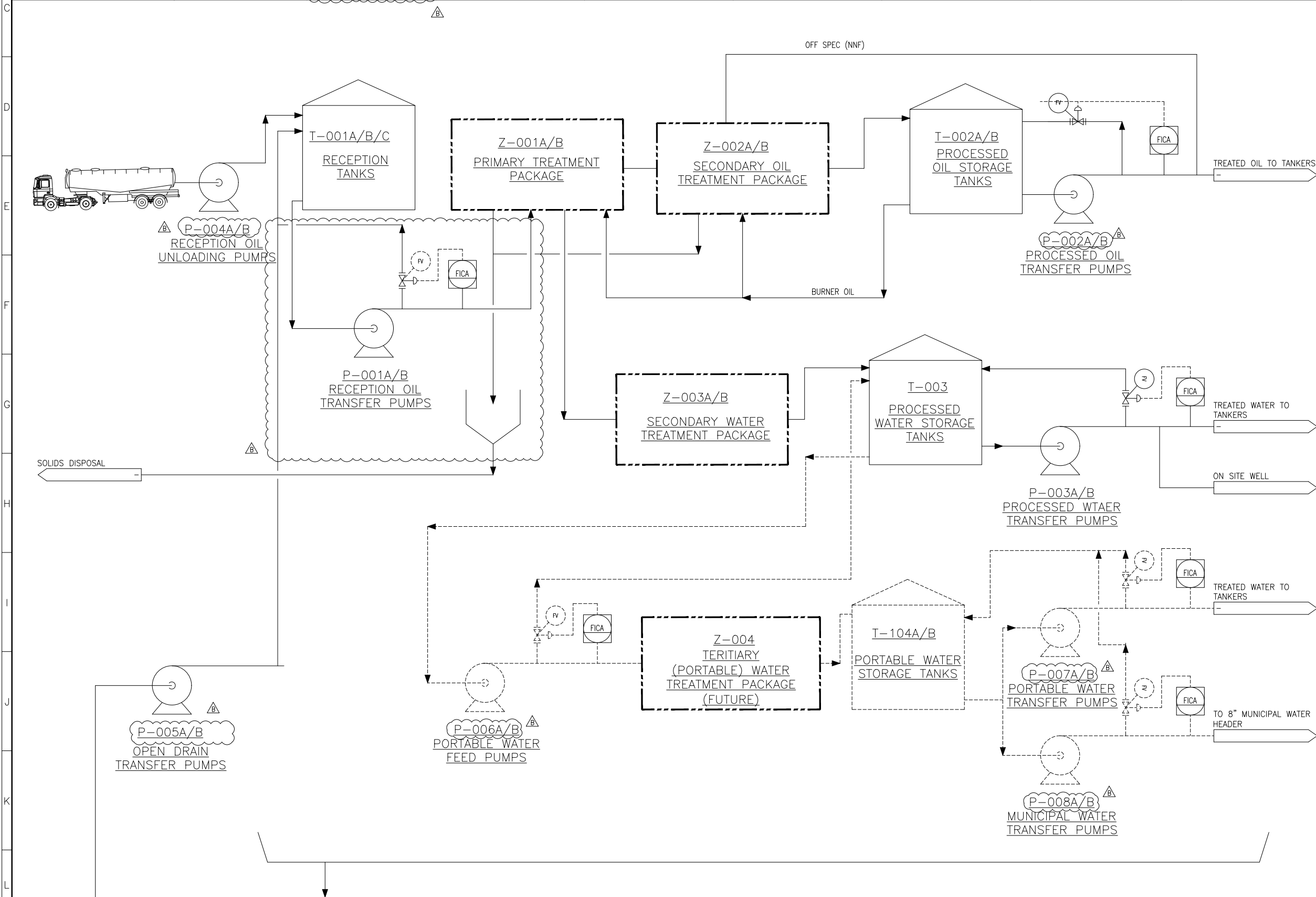


GENERAL NOTES:

1. PROVISION FOR FUTURE TERTIARY PORTABLE WATER TREATMENT PACKAGE

B	16.07.2021	ISSUED WITH BID	VK	TRK	DPC
A	02.03.2021	ISSUED FOR REVIEW	VK	TRK	CHL
REV	DATE	DESCRIPTION	DRN	CHK	APP
CLIENT					
VENDOR					
PROJECT OIL AND OILY WASTE RECEPTION FACILITY					
TITLE PROCESS FLOW DIAGRAM					
DRAWING No CMG-BA3-P-DW-001			SHEET 1 OF 2	REV B	
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	1	2	3	4	5	6	7	8	9	10	11	12
A	ITEM NO.	T-001A/B/C	<u>△</u> Z-101A/B	<u>△</u> Z-102A/B	T-002 A/B	<u>△</u> Z-103A/B	T-003	Z-104 (NOTE 1)	T-004A/B			
	SERVICE	RECEPTION OIL TANKS	PRIMARY TREATMENT PACKAGE	SECONDARY OIL TREATMENT PACKAGE	PROCESSED OIL STORAGE TANK	SECONDARY WATER TREATMENT PACKAGE	PROCESSED WATER STORAGE TANK	TERTIARY WATER TREATMENT PACKAGE	PORTABLE WATER STORAGE TANKS			
	DESIGN PRESSURE	barg ATM	FV / 10 (VTC)	FV / 10 (VTC)	ATM	FV / 10 (VTC)	ATM	FV / 10 (VTC)	ATM			
	DESIGN TEMPERATURE (MIN/MAX)	°C 0 / 65	0 / 65	0 / 65	0 / 65	0 / 65	0 / 65	0 / 65	0 / 65			
	OPERATING PRESSURE	barg ATM	VTC	VTC	ATM	VTC	ATM	VTC	ATM			
	OPERATING TEMPERATURE (MIN/MAX)	°C 21 / 35	21 / 35	21 / 35	21 / 35	21 / 35	21 / 35	21 / 35	21 / 35			
B	CAPACITY	2000 M3 (EACH)	<u>△</u> 10 M3/HR (PER TRAIN)	<u>△</u> 10 M3/HR (PER TRAIN)	2000 M3 (EACH)	5 M3/HR (PER TRAIN)	1000 M3 (EACH)	10 M3/HR	1000 M3 (EACH)			
	DIMENSION (OD X T/T)	50' X 36'	VTA	VTA	50' X 36'	VTA	36' X 36'	VTA	36' X 36'			
	ITEM NO.	<u>△</u> P-004A/B	P-002A/B	<u>△</u> P-003A/B	P-003A/B	<u>△</u> P-006A/B (NOTE 1) <u>△</u>	<u>△</u> P-007A/B (NOTE 1) <u>△</u>	<u>△</u> P-008A/B <u>△</u>	<u>△</u> P-005A/B <u>△</u>			
	SERVICE	RECEPTION OIL UNLOADING PUMPS	RECEPTION OIL TRANSFER PUMPS	PROCESSED OIL TRANSFER PUMPS	PROCESSED WATER TRANSFER PUMPS	PORTABLE WATER FEED PUMPS	PORTABLE WATER TRANSFER PUMPS	MUNICIPAL WATER TRANSFER PUMPS	OPEN DRAIN TRANSFER PUMPS			
	DESIGN PRESSURE	barg 10	10	10	10	10	10	10	10			
	DESIGN TEMPERATURE (MIN/MAX)	°C 0 / 65	0 / 65	0 / 65	0 / 65	0 / 65	0 / 65	0 / 65	0 / 65			
	OPERATING PRESSURE	barg 3	3	3	3	3	3	3	3			
	OPERATING TEMPERATURE (MIN/MAX)	°C 21 / 35	21 / 35	21 / 35	21 / 35	21 / 35	21 / 35	21 / 35	21 / 35			
	CAPACITY	m3/hr 5	10	5	5	10	10	10	5			



GENERAL NOTES:

- | | |
|---|---|
| 1. PROVISION FOR FUTURE TERTIARY PORTABLE WATER TREATMENT PACKAGE | A |
|---|---|

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A	02.03.2021	ISSUED FOR REVIEW	VK	TRK	DPC
REV	DATE	DESCRIPTION	DRN	CHK	APP

CLIENT



VENDOR



PROJECT

OIL AND OILY WASTE RECEPTION FACILITY

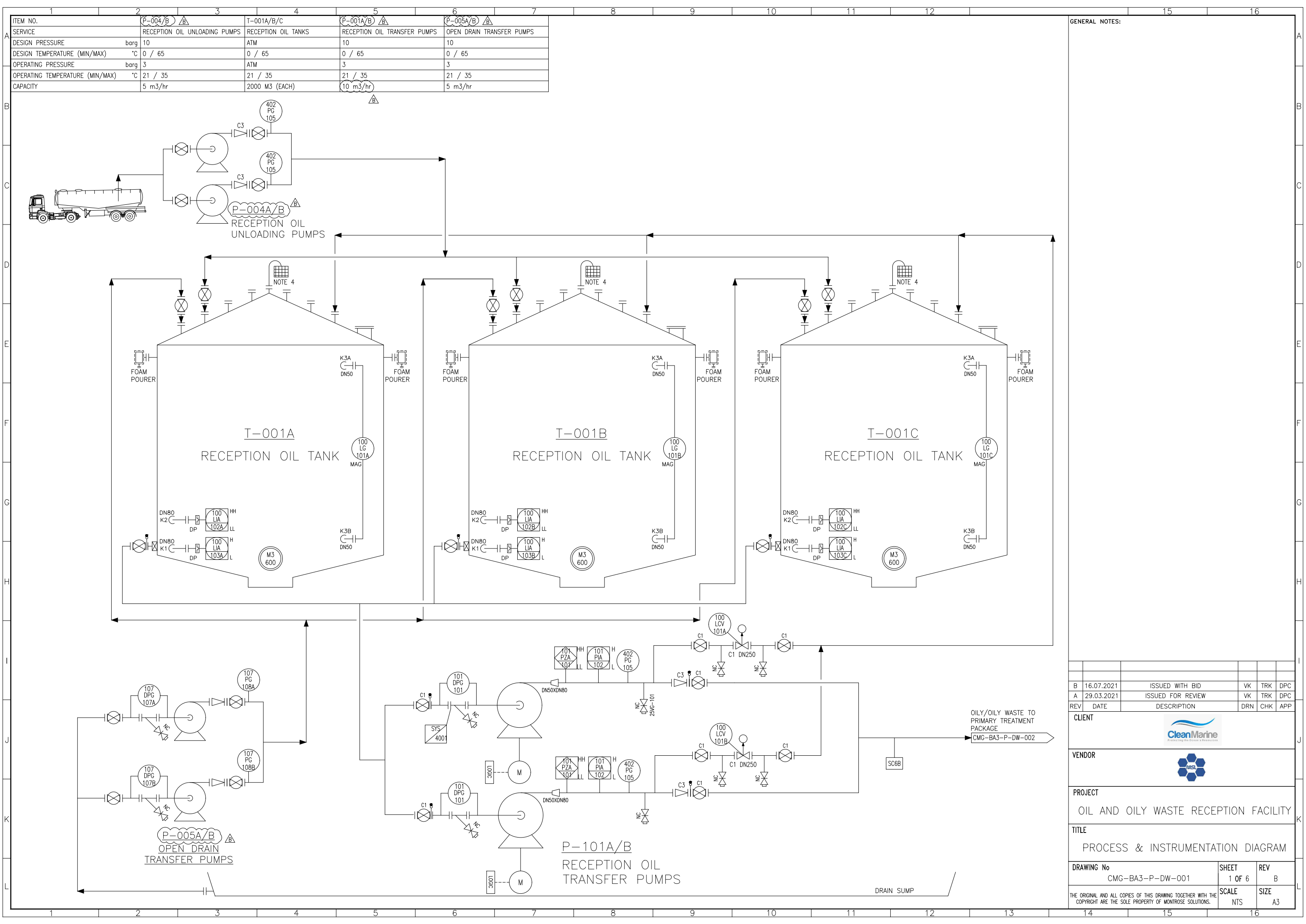
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PROCESS FLOW DIAGRAM

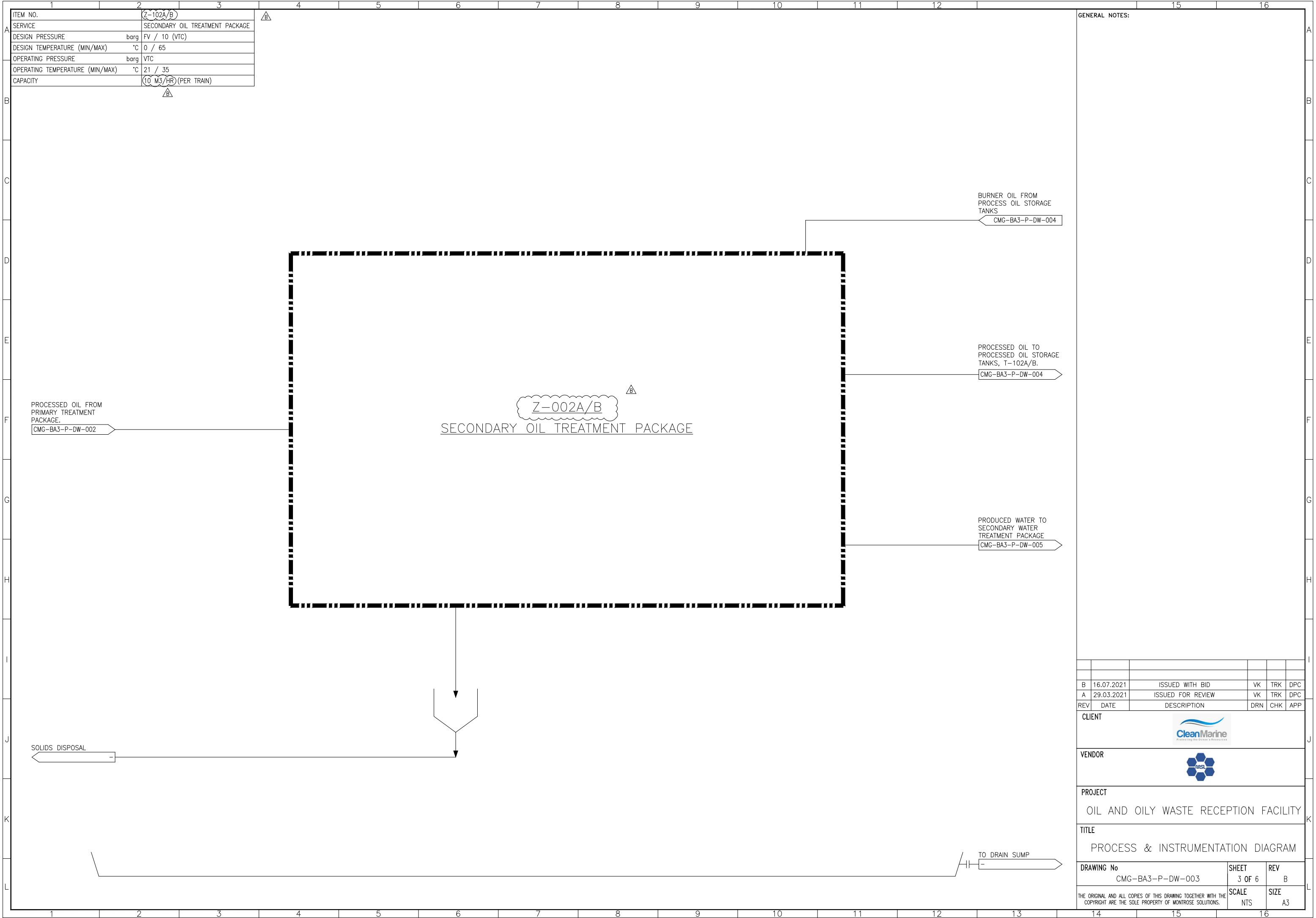
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APPENDIX E: PID

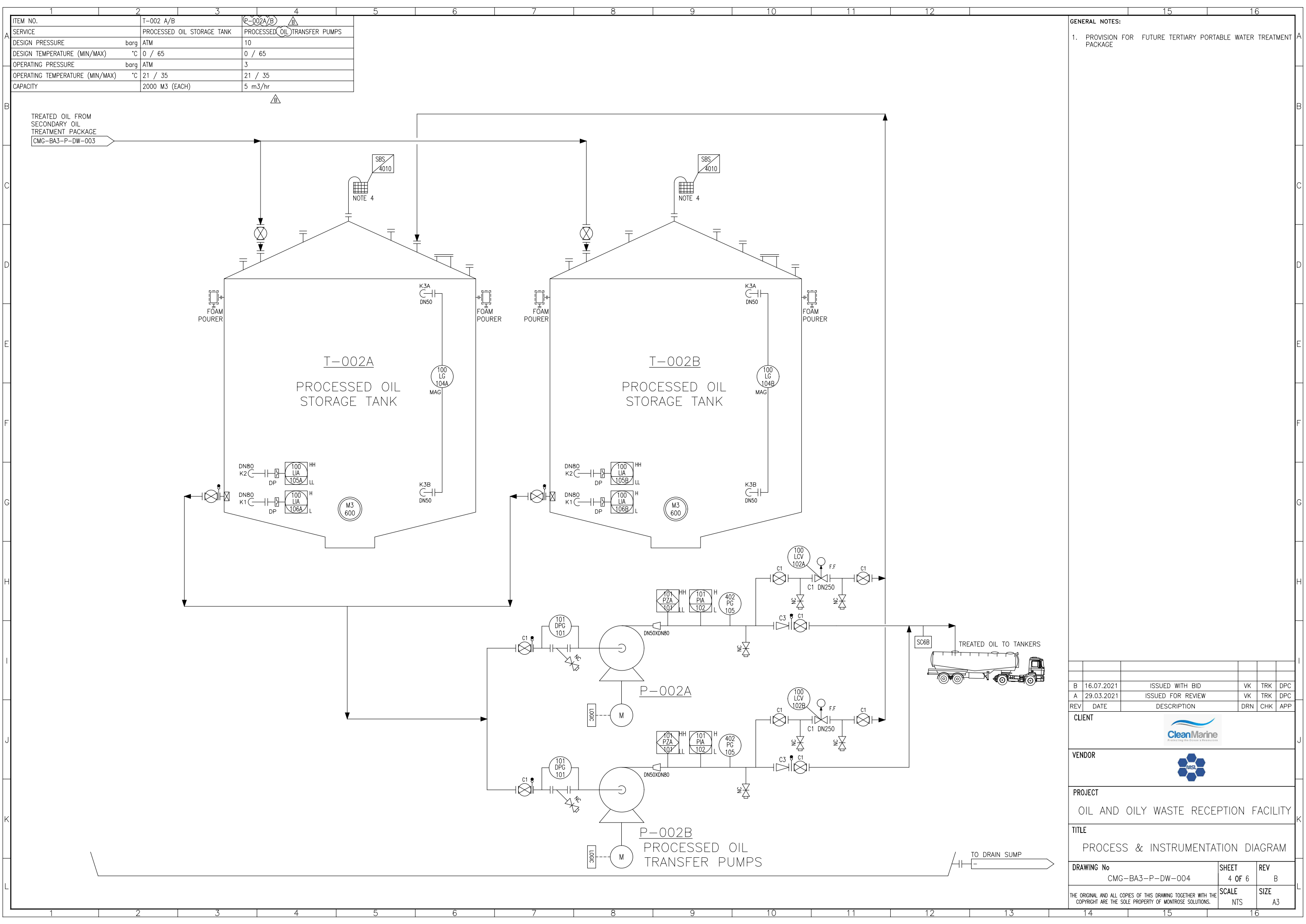


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A	29.03.2021	ISSUED FOR REVIEW	VK	TRK	DPC
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VENDOR					
PROJECT			OIL AND OILY WASTE RECEPTION FACILITY		
TITLE			PROCESS & INSTRUMENTATION DIAGRAM		
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REV	DATE	DESCRIPTION	DRN	CHK	APP
CLIENT					
VENDOR					
PROJECT			OIL AND OILY WASTE RECEPTION FACILITY		
TITLE			PROCESS & INSTRUMENTATION DIAGRAM		
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1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

A B C D E F G H I J K L

ITEM NO.	Z-103A/B
SERVICE	SECONDARY WATER TREATMENT PACKAGE
DESIGN PRESSURE	barg FV / 10 (VTC)
DESIGN TEMPERATURE (MIN/MAX)	°C 0 / 65
OPERATING PRESSURE	barg VTC
OPERATING TEMPERATURE (MIN/MAX)	°C 21 / 35
CAPACITY	5 M3/HR (PER TRAIN)
DIMENSION (OD X T/T)	VTA

PRODUCED WATER FROM PRIMARY TREATMENT PACKAGE
CMG-BA3-P-DW-002

Z-003A/B
SECONDARY WATER TREATMENT PACKAGE

PRODUCED WATER TO PROCESSED WATER STORAGE TANK
CMG-BA3-P-DW-006

TO DRAIN SUMP

GENERAL NOTES:

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REV	DATE	DESCRIPTION	DRN	CHK	APP

CLIENT

CleanMarine
Protecting the Ocean & Resources

VENDOR

MST

PROJECT

OIL AND OILY WASTE RECEPTION FACILITY

TITLE

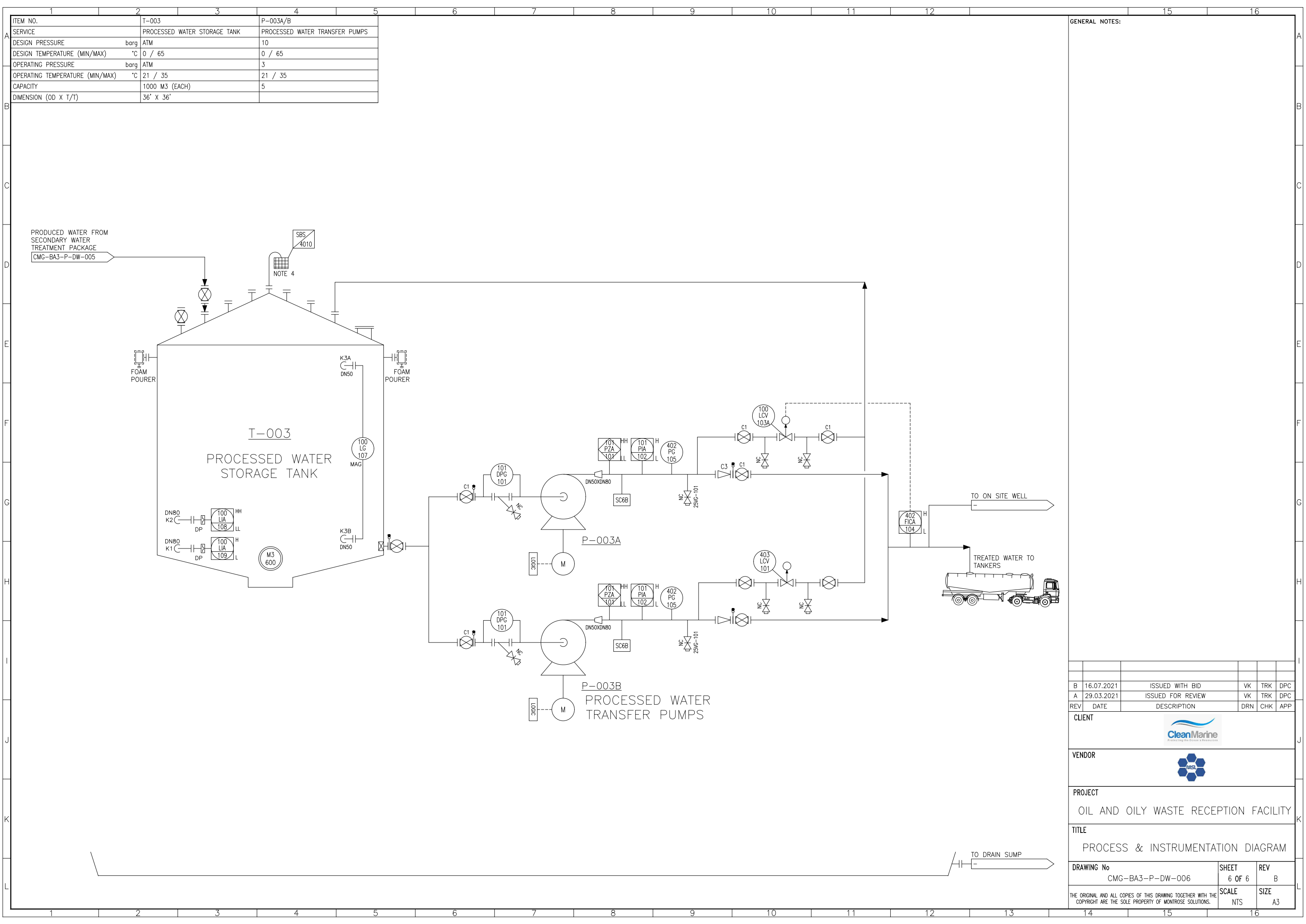
PROCESS & INSTRUMENTATION DIAGRAM

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CLIENT



VENDOR



PROJECT

OIL AND OILY WASTE RECEPTION FACILITY

TITLE

PROCESS & INSTRUMENTATION DIAGRAM

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SCALE	SIZE
NTS	A3

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APPENDIX F: SANITATION SERVICES RECEIPT



Sanitation Services
Service First, Safety Always

PROFILE #
(SSC office only)

SPECIAL WASTE PROFILE SHEET

A. Generator

Name _____
Site Address _____
City, State, Zip _____
Contact _____
Phone _____
Fax _____

B. Billing

Name _____
Address _____
City, State, Zip _____
Contact _____
Phone _____
Fax _____

C. Description of Waste

Name of Waste _____
Process Generating Waste _____
Estimated Volume _____ Frequency _____
Special Handling Instructions or Other Waste Data _____

D. Chemical Composition/Physical Properties

Constituents	Concentration	Physical State
		Color _____
		Free Liquids _____
		Flash Point _____
		pH _____
		Total Solids _____
		Reactive Cyanide _____
		Reactive Sulfide _____

E. Sample/Analysis Information

Check that all apply:

☐ Sample submitted with profile ☐ Laboratory Analysis submitted ☐ Material Safety Data Sheet Submitted

Laboratory Name _____ Sample Date _____ Sample I.D. _____

F. Sample/Analysis Information

1. This waste is not a hazardous waste as defined by federal, state, or local laws and regulations.
2. This waste does not contain regulated quantities of PCBs as defined by federal, state, or local laws and regulations.
3. This waste does not contain infectious wastes as defined by federal, state, or local laws and regulations.
4. To the best of my knowledge, all information submitted in this and all attached documents contain true and accurate descriptions of this waste. Any analysis submitted was performed on a representative sample as defined in 40 CFR 261 – Appendix 1 and was obtained by using this or an equivalent sampling method. All relevant information regarding known or suspected hazards in the possession of the generator has been disclosed.

Generator Signature: _____

Date: _____

Approval Signature: _____

Date: _____

APPENDIX G: CMG WASTE FORM RECEIPT

Duty of care: waste transfer note

Section A – Description of waste

A1 Description of the waste being transferred

List of Waste Regulations code(s)

A2 How is the waste contained?

Loose ☐ Sacks ☐ Skip ☐ Drum ☐

Other ☐ _____

A3 How much waste? For example, number of sacks, weight

Section B – Current holder of the waste – Transferor

By signing in Section D below I confirm that I have fulfilled my duty to apply the waste hierarchy as required by (section 3(2)) of the Environmental Planning and Protection act 2019 Yes

B1 Full name

Company name and address

Postcode _____ SIC code _____

B2 Name of your unitary authority or council

B3 Are you:

The producer of the waste? ☐

The importer of the waste? ☐

The local authority? ☐

The holder of an environmental permit? ☐

Permit number _____

Issued by _____

Registered waste exemption? ☐

Details, including registration number

A registered waste carrier, broker or dealer? ☐

Registration number _____

Details (are you a carrier, broker or dealer?)

Section C – Person collecting the waste – Transferee

C1 Full name

Company name and address

Postcode _____

C2 Are you:

The local authority? ☐

C3 Are you:

The holder of an environmental permit? ☐

Permit number _____

Issued by _____

Registered waste exemption? ☐

Details, including registration number

A registered waste carrier, broker or dealer? ☐

Registration number _____

Details (are you a carrier, broker or dealer?)

Section D – The transfer

D1 Address of transfer or collection point

Postcode _____

Date of transfer (DD/MM/YYYY) _____

D2 Broker or dealer who arranged this transfer (if applicable)

Postcode _____

Registration number _____

Time(s) _____

Transferor's signature _____

Name _____

Representing _____

Transferee's signature _____

Name _____

Representing _____

APPENDIX H: HURRICANE PLAN



MARPOL Annex I Oil and Oily Waste GBSL Early Processing Facility

Hurricane Preparations

Document No. CMG-GBS-O-PR-0010

1	27.05.2021	TD	AH	RS	Revised to include ISO tanks on East Beach
0	21.05.2021	TD	AH	RS	First Issue
A	01.04.2021	TD	AH		Issued for Comment
Revision	Date	Prepared	Reviewed	Approved	Issued Status


	MARPOL Annex I Oil and Oily Waste GBSL Early Processing Facility	 Clean Marine Protecting the Ocean's Resources
--	--	---

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2 Abbreviations.....4

3 Scope4

4 Plan4

4.1 4-5 Day Warning4

4.2 48hrs Before Severe Weather Expected.....4

	MARPOL Annex I Oil and Oily Waste GBSL Early Processing Facility	
--	--	---

1 Purpose

The purpose of this Hurricane Preparation procedure is to detail the CMG facility requirements as an Addenda to the Grand Bahama Shipyard EWI 020 Hurricane Contingency Plan and should be read in conjunction with the document CMG-GBS-O-RP-0001 EPF Operations Risk Register.

2 Abbreviations

CMG	Clean Marine Group
PRF	Port Reception Facility
IMS	Integrated Management System
GBSL	Grand Bahama Shipyard Limited

3 Scope

The scope of this plan is limited to the CMG equipment installed within the GBSL WTP area. This excludes the WTP sludge tanks and WTP process building.

4 Plan

4.1 4-5 Day Warning

Upon receiving this notification from GBSL, CMG personnel will carry out the following additional actions:

- Check and remove any loose materials including un-used IBC containers.
- Lash containers and trailer together.
- Lash pumps together.
- Check volumes of oil stored in ISO tanks on East Beach. Should the volumes exceed that of the GBSL storage tanks, then no further receipt should be taken. The volume should be reduced to that which can be transferred to the GBSL tanks and any excess should be moved offsite to a secure storage area.

4.2 48hrs Before Severe Weather Expected

- Shutdown unit
- Drain all oil from baffle tank to storage tanks.
- Drain oil from ISO tank (used in the processing) to storage tanks.
- Transfer oil from ISO tanks on East Beach to the GBSL tanks.
- Close all valves. Leave hoses in place as these will provide additional security against individual items becoming flying debris.
- Disconnect generator.
- Disconnect power from incinerator building to separator. Ensure all junction box penetrations are sealed with metal plugs.
- Remove exhaust stack from separator and secure inside container. Ensure blind flange is installed in place.
- Disconnect gas bottles and remove to warehouse or return to supplier.
- Disconnect water supply firehose and secure in container.
- Remove all chemicals storage to warehouse. Drain down chemical dosing tank.
- Move mobile equipment (generators, compressors) to shipyard warehouse.
- Close and lock all containers doors.

Upon completion, notify GBSL personnel and evacuate site.

APPENDIX I: GROUNDWATER MONITORING PLAN



SOIL AND GROUNDWATER MANAGEMENT PROCEDURE

CMG-IMS-Q-PR-0025

REVISION NUMBER: A
DATE: 9/17/2021

Uncontrol
led Copy




Control
led
Copy



APPROVAL

The signatures below certify that this procedure has been reviewed and accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	CHRISTINA PRATT		PROJECT COORDINATOR	9/17/2021
Reviewed by	TIEN DO		OPERATIONS MANAGER	
Approved by	MICHAEL FITTON		CEO	01/11/2021

AMENDMENT RECORD

This procedure is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Revision	Date

COMPANY PROPRIETARY INFORMATION

The electronic version of this procedure is the latest revision. It is the responsibility of the individual to ensure that any paper material is the current revision. The printed version of this manual is uncontrolled.

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1 Introduction

The purpose of this document is to detail the procedures to evaluate and manage soil and groundwater that is contaminated with residual oil or chemicals should this occur during the operations of the Clean Marine Group (CMG) Basin3 MAPROL Port Reception Facility.

2 Abbreviations

CMG Clean Marine Group

EM Environmental Manager

HSE Health, Safety and Environmental

ESMP Environmental and Social Management Plan

3 Related Documents

CMG-IMS-Q-PO-0002 Smoking Policy

CMG-IMS-Q-PO-0003 Drugs Policy

CMG-IMS-Q-PO-0004 Alcohol Policy

CMG-IMS-Q-PO-0005 Safe Driving Policy

CMG-IMS-Q-PO-0010 Environmental Policy

CMG-IMS-Q-PR-0018 Emergency Preparedness and Response Procedure

CMG-IMS-Q-PR-0009 Risk and Opportunities Procedure

CMG-IMS-Q-PR-0021 Traffic Management Plan

CMG-IMS-Q-PR-0023 Spill management and response Plan

CMG-IMS-Q-PR-0028 Health and Safety Plan

4 Site Details

The proposed site location for the CMG Facility is on the western side of Freeport Harbour on Parcel 2 of Basin 3. The site more specifically is to the west of the Freeport Container Port offices and encompasses 4.12 acres. The zoning is Heavy Industry by the Grand Bahama Port Authority's Freeport Land Use Masterplan and the proposed project is consistent with the current zoning designation.

The project area has been cleared of almost all vegetation from previous harbour development. The area is flat and contains limestone fill material from previous dredging activities. Elevations range from a high of 13.5 feet above sea level in the south center of the site to sea level at the basin edge along the west.



Figure 1: Aerial view of Basin 3 and the CMG project site

5 Baseline Data

Baseline data will be collected and generated by taking samples of the soil and groundwater via an observation well. This observation well will be drilled prior to commencing any site work. Readings will be taken on a quarterly basis for groundwater monitoring. A salinity profile for the observation well will be conducted after letting the well settle for 5-7 days following drilling completion. Salinity measurement will be taken at 1 ft. intervals to determine water quality using a YSI Model 30 PRO Conductivity, Salinity, TDS meter. Additionally, the well will be purged, sampled, and analysed for the following parameters:

- Volatile Organic Compounds (VOC's) - EPA Method 8260B
- Semi-volatile Organics PAH's– Method 8270D
- Florida Petroleum Range Organics – FL PRO
- Total Organic Carbon (TOC)
- Chemical Oxygen Demand (COD)
- Total Dissolved Solids (TDS)

Field measurements of the purge water will be analysed for pH, Salinity, Conductivity, and Temperature.

6 Soil and Groundwater Management Plan

6.1 Identification

The site will have berms that will contain operating areas, transfer areas and stormwater collection drains. The fluids in these areas are designed to be collected and returned to the tanks for processing. In all other areas, operators will visually be able to identify oil impacted soil which will be discoloured grey or black, contain rainbow-coloured sheens and may emit petroleum type odour. Any spills of chemicals or oil shall be reported immediately and rectified before any possible escalation of the spill.

The groundwater will be monitored on a quarterly basis and compared with the baseline results. Trends will be analysed for performance of the systems to ensure that water injected into the deep well is in accordance with the Environmental and Social Management Plan (ESMP).

6.2 Rectification

Petroleum or chemical impacted soils that are encountered must be managed so as to not affect the site. The area shall be removed into bins that are duly marked for contaminated soil. This soil can be used in the bio-remediation process or disposed in the landfill facility subject to the testing requirements of that facility.

Any deviations from the groundwater parameters or where trends are observed in the monitoring, then this should be brought to the attention of the Environmental Manager. The Environmental Manager may stop the injection of water into the deep well and store the water in the on-site tanks.

The Health and Safety Plan shall be followed at all times.

7 Reporting

Internal monitoring will be recorded and reported to management on a monthly basis. External reporting is required to the GBPA and DEPP. The frequency of the reports will be monthly to reflect the internal management reports. These will be reduced to statutory reporting frequency after the first year of operations.

APPENDIX J: HEALTH AND SAFETY PLAN (HASP)



HEALTH & SAFETY PLAN

CMG-IMS-Q-PR-0028

REVISION NUMBER: A

DATE: 9/17/2021

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APPROVAL

The signatures below certify that this procedure has been reviewed and accepted and demonstrates that the signatories are aware of all the requirements contained herein and are committed to ensuring their provision.

	Name	Signature	Position	Date
Prepared by	CHRISTINA PRATT		PROJECT COORDINATOR	9/17/2021
Reviewed by	TIEN DO		OPERATIONS MANAGER	
Approved by	MICHAEL FITTON		CEO	01/11/2021

AMENDMENT RECORD

This procedure is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual additions or omissions is given below:

Page No.	Context	Revision	Date

COMPANY PROPRIETARY INFORMATION

The electronic version of this procedure is the latest revision. It is the responsibility of the individual to ensure that any paper material is the current revision. The printed version of this manual is uncontrolled.

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1 Introduction

The purpose of this document outlines the policies and procedures necessary to protect employees and visitors from potential hazards when working or visiting the Basin3 facility operated by Clean Marine Group (CMG). The occupational health and safety requirements generally follow the industry standard safety hierarchy that includes elimination of risks, source control, risk minimisation and lastly the use of personal protective equipment.

2 Abbreviations

CMG	Clean Marine Group
HSE	Health, Safety and Environmental
PPE	Personal Protective Equipment
JSA	Job Safety Analysis
WI	Work Instruction
ESMP	Environmental and Social Management Plan
MSDS	Material Safety Data Sheet
LO/TO	Lock Out/Tag Out

3 Related Documents

CMG-IMS-Q-PO-0002	Smoking Policy
CMG-IMS-Q-PO-0003	Drugs Policy
CMG-IMS-Q-PO-0004	Alcohol Policy
CMG-IMS-Q-PO-0005	Safe Driving Policy
CMG-IMS-Q-PO-0010	Environmental Policy
CMG-IMS-Q-PR-0018	Emergency Preparedness and Response Procedure
CMG-IMS-Q-PR-0009	Risk and Opportunities Procedure
CMG-IMS-Q-PR-0021	Traffic Management Plan

4 Safety responsibility

The CMG Health, Safety and Environmental (HSE) Manager has the overall responsible for the management of the health and safety of all personnel whilst on site however each person is responsible for their own and others health and safety. **ALL** personnel have the authority to stop work should they identify a hazard which may lead to a health and safety issue. Contractors that are working on site will be briefed prior to commencing any work on site and issued with this Health and Safety Plan and must follow the recommendations that are made within this document. As an alternative, the contractor may submit their own Health and Safety Plan which must be approved by the CMG HSE Manager prior to commencing work.

5 Training

All employees will be properly trained per their job functions and responsibilities. The training will be provided to all employees (including managers) and updated yearly. However, specific personnel will receive additional training, as required, to perform their specific job function. For example, a forklift operator must receive training on the operation of the equipment and pass a certification as a competent individual. Only individuals trained and qualified to operate the forklift will be permitted to operate it. Electrical system maintenance is another example. Only the Electrical Maintenance personnel trained and qualified to maintain and repair any electrical component will be permitted to complete these tasks. Specific employee qualifications, responsibilities and training requirements will be determined as the project develops and revisions to this initial ESMP will document those revisions.

All subcontractors working at the PRF will receive initial induction safety training (typically a ±two-hour in-class training/review) at the facility. This induction training will focus on basic safety requirements, inspections, emergency response actions (alarms, muster sites, exit strategies, etc.), and reporting requirements. It will also include disciplinary actions for failure to follow the facility rules. Non-workers, (visitors, guests, third-party inspectors, etc.), will not be required to complete the contractor safety induction training but will require visitor badging and escort by a CMG (badged) representative. Visitors will also be required to wear (and be provided) PPE as appropriate

6 Job Safety Analysis

Safe job execution is a function of proper training, planning and attention to detail. Common tasks that have a demonstrated risk of environmental, occupational or social risk have been assigned a specific Work Instruction (WI). Additional WI control documents will be developed as the project proceeds into operations and as additional needs are identified. A WI describes the specific task function, engineering controls suitable for risk reduction, training requirements, safety requirements, procedures to follow, the requirements/applicability for a job safety analysis (JSA), first-aid and emergency response considerations, work permit requirements (for example if a Confined Space or Hot Work permit is required) and the types of PPE required to complete the task. Once a Safe Work Permit has been issued, the task can proceed. The first step is to assess if the proper individuals, tools, safeguards, monitoring, and oversight is available to safely complete the job. This will of course vary from job to job and may range from an entire plant shutdown for new critical equipment installation to the replacement of overhead lightbulbs. While the specific tasks will vary, the process of pre-work assessment, WI document review, JSA review, permit issuance, resource identification, proper oversight, and sign-off will be applied to all jobs.

The table below provides general guidance on occupational safety that will be applicable to the PRF. It is not inclusive of all potential occupational requirements. These will be addressed by the Job Safety Analysis and Work Instructions (WI).

ESMP Aspect	Action/Mitigation Measure	Responsible Party	Standard/Reference
-------------	---------------------------	-------------------	--------------------

Physical hazards	<ul style="list-style-type: none"> • All machinery shall be guarded as appropriate • Boiler safety • LO/TO • Forklifts and moving equipment / vehicle safety • No ionizing or other radiation hazards are anticipated 	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)
Chemical hazards	<ul style="list-style-type: none"> • Chemical containers must be labelled and stored properly • Vapours and fumes that come from welding or exposure to solvents must be controlled and properly vented. Exposure assessments are required. PPE may be required. • Gases like acetylene, propane, carbon monoxide and helium and flammable materials like gasoline, solvents, and explosive chemicals must be properly labelled, stored, banded and ventilated. • Chemical pesticides should be used sparingly and per manufacturer's instructions. 	CMG	
Confined spaces	Follow HSE/OSHA Confined spaces rule and industry guidance.		Confined spaces - HSE
Working at height	<p>Working from heights, including ladders, scaffolds, roofs, or any raised work area. Safety railings, toe boards, and other building components should be used to avoid working at height. Other requirements include:</p> <ul style="list-style-type: none"> • Ladder inspection and safety standards • Scaffold inspection and safety standards • Roof work standards 	CMG	Work at height - Occupational health and safety (hse.gov.uk)
Slips, Trips and Falls	Spills on floors or tripping hazards, such as blocked aisles or cords running across the floor shall be assessed for each task by the JHA.	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC)

	Good housekeeping shall be practiced with daily inspections and logs.		/ UK HSE Regulations for specific workplace requirements (as an example)
Vehicle collisions	Vehicle collisions for forklifts will be mitigated by dedicated drive paths / markings and signage and/or barriers. Other vehicles are managed per the TMP.	CMG	
Drowning	Ring buoys will be placed at appropriate intervals along the quay.	CMG	U.S.C.G. Safety Regulations, and Bahamas Health and Safety at Work Act.
Electrical hazards	Electrical Area Classification / Bahama Building Code	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)
Exposure to the elements	<ul style="list-style-type: none"> Heat stress will be assessed as part of the JHA Sunblock, hats with visors/brims and long-sleeve shirts to be provided for sun protection for outside workers. 	CMG	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)
Ergonomic injuries	<p>Ergonomic Hazards including but not limited to the following will be assessed for mitigation for each task as part of the JHA:</p> <ul style="list-style-type: none"> Improperly adjusted workstations and chairs Frequent lifting Poor posture Awkward movements, especially if they are repetitive Repeating the same movements over and over Having to use too much force, especially if you have to do it frequently Vibration 	CMG	/ UK HSE Regulations for specific workplace requirements (as an example)

Exposure to organic and inorganic dust	<ul style="list-style-type: none"> Generated by moving equipment and vehicles, vibration and wind May pose respiratory risk, eye, nose and throat irritation, poor visibility. 	CMG and General Contractor	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example).
Exposure to noise.	Hearing safety assessed by location and task. Hearing protection for workers (permanent and transitory) to be provided at entrances, along with warning signage.	CMG and General Contractor	Bahamas Employment Act of 2001 / Bahamas Health and Safety at Work Act / General EHS Guidelines (IFC) / UK HSE Regulations for specific workplace requirements (as an example)

6.1 Environmental Hazards

Environmental factors such as weather, insects and irritant plants can pose hazards when performing outdoor tasks. The person conducting the work shall make every reasonable effort to mitigate these hazards should they be present.

Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. In particular:

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

The responsible manager conducting the work will encourage all personnel present to increase the consumption of water or electrolyte containing beverages such as Gatorade® when the potential for heat stress exists. In addition, personnel will be encouraged to take additional rests whenever they feel any adverse effects that may be heat related.

Exposure to Cold

Although the location is known for heat stress, the combination of perspiration and air-conditioned offices can lead to health issues related to the cold. Personnel should be aware and take mitigating actions suitable such as changing to dry clothing when re-entering air-conditioned offices for extended periods after long periods working in the weather.

6.2 Physical Hazards

There are physical hazards associated with this site. Hazard identification, training, adherence to the planned site activities and careful housekeeping can prevent many incidents and potential issues arising from physical hazards. Potential physical hazards associated with this site have been detailed in the Risk Register and some are listed below.

Slip/Trip/Falls

Some areas may have wet surfaces that will greatly increase the possibility of inadvertent slips. Good housekeeping practices are essential to minimise the trip hazards.

Electrical hazards

Electrical devices and equipment shall be de-energised prior to working near them. All extension cords shall be kept out of water and protected from cut or crush hazards. All electrical circuits shall be protected with ground fault circuit interrupters.

Heavy Equipment

Daily start checklist shall be used to ensure heavy equipment is inspected to ensure safety equipment and devices are operational. These includes items such as seatbelts and fire extinguishers.

6.3 Chemical Hazards

Chemical substances can enter the unprotected body by inhalation, skin absorption, ingestion or through a puncture wound (injection). A contaminant can cause damage to the point of contact or can act systematically, causing a toxic effect at a part of the body distant from the point of initial contact.

Chemicals will be segregated and stored according to the Material Safety Data Sheet (MSDS). All MSDS will be available in the storage area, operating area and main office. Eye wash and shower stations will be located in the storage and production areas. These will be indicated in the induction and maps of the facility.

7 Traffic Management

Operational equipment (primarily forklifts and vehicles) moving about the facility, and commercial delivery and transport tankers and trucks entering and leaving the site will generate traffic with potential for vehicular, operations and pedestrian conflicts. Exhaust emissions is also another potential impact (address in section on air emissions). In addition, according to industry publications the majority of construction transport accidents result from the inadequate separation of pedestrians and vehicles. This can usually be avoided by careful planning, particularly at the design stage, and by controlling vehicle movement during operations. Average daily trips (ADT) for the site is estimated as follows and totals 78/day:

- Employee trips (9/shift at 2 shifts/day) 18 Passenger vehicles
- Visitor trips (5/day) 10 Passenger vehicles
- Standard Deliveries (5/day) 10 Commercial trucks
- Process deliveries (10/day) 20 Tanker trucks (11,000 gal. capacity)

- Process shipment (10/day) 20 Tanker trucks (11,000 gal. capacity)

As the site is planned to be operational 24 hours/day, the heavy tanker trips will likely be spread over the full period whereas commercial deliveries and visitors will be across normal working hours. Workers will enter and leave primarily during shift changes.

8 Personal Protective Equipment

CMG will provide all personal protective equipment (PPE) requirements for employees and visitors at no cost to the employee or visitor. The specific PPE to be assigned is job/task dependent and is defined by the JSA process, WI document and Safe Work Permit. In general, PPE anticipated to be provided and stored on-site include, but are not limited to:

- Rubber boots with reinforced toe
- Hard hat
- Safety glasses or goggles or face shields
- Hearing protection
- Masks (appropriate for tasks)
- Air quality monitor
- Gloves
- Coveralls
- Sunscreen
- Bug repellent
- Safety harness when working at height

The office area will be designated as a safe area where no PPE is required. During the visitor induction or employee induction, the PPE required for each area will be outlined. In addition, signs will be posted to advise of the required PPE for each area. Common PPE used by visitors shall be sanitised after each use.

9 Air Monitoring

9.1 Site monitoring

Particulate monitoring (PM) will include measuring levels of PM_{2.5} and PM₁₀ using a handheld monitor for example, a handheld real-time sensor (light scattering) that can provide instant results. Pre-construction sampling will occur prior to the start of site activities to establish a baseline (compensating for wind and humidity). PM monitoring will occur on a weekly basis during operations until a baseline operational measurement is established (readings consistent to a 90% confidence interval). Monitoring shall be per the following table.

Pollutant	Monitoring Frequency	Period /	Method / Location
Sulfur dioxide (SO ₂)	24-hour reading	/ 1x month	Stack (for boiler) Exhaust (for generator)

	10 minute (averaged) / 1x month	
Nitrogen dioxide (NO ₂)	24-hour reading / 1x month 10 minute (averaged) / 1x month	Stack (for boiler) Exhaust (for generator)
Particulate Matter PM ₁₀	24-hour reading / 1x week (initially) until baseline for operations is established to demonstrate compliance	Background ambient readings prior to development (1x). Stack (for boiler) Exhaust (for generator)
Particulate Matter PM _{2.5}	24-hour reading / 1x week (initially) until baseline for operations is established to demonstrate compliance and then 1x/year afterwards or if a process change occurs.	Background ambient readings prior to development (1x). Stack (for boiler) Exhaust (for generator)
Ozone	24- hour measurement / 1x week (initially) until a baseline for operations is established to demonstrate compliance and then 1x/year afterwards or if a process change occurs.	Background ambient readings prior to development (1x). Stack (for boiler) Exhaust (for generator)
GHG	CO ₂ emissions to be calculated based on system losses (total) and reported monthly.	Method per software (API recommended methodology). A portable CO ₂ monitor can be used to validate estimates at specific tank vent locations.

All fuel utilized onsite for construction equipment will be monitored to confirm it is low-sulphur and all equipment will be inspected for compliance to the Tier IV standards. Original equipment manufacturer certifications will be required from the vendors. Compliance will be reported in the project logbook and per the yearly reporting with ESMP updates.

10 Emergency Response

The available immediate assistance will consist of the following equipment:

- Eye wash and shower
- Defibrillator
- First Aid kit

Emergency first aid will be provided by the nearest Emergency Care Providers.

Daytime services:

Hawksbill Clinic – Hawksbill Village

+1 242 352 7722

Eight Mile Rock Clinic – Bain Town

+1 242 348 2227

Full-service Care (24-hours)

Rand Memorial Hospital

+1 242 350 6700 or 242 352 2689

10.1 First Aid

CMG will maintain a defibrillator and fully stocked first aid station in the construction site Office breakroom. The first aid kit will be inspected yearly and restocked as needed.

APPENDIX K: TRAFFIC MANAGEMENT PLAN



MARPOL Annex I Oil and Oily Waste Port Reception Facility


Traffic Management Plan

Document No. CMG-BA3-C-PR-0800


A	20.05.2021	TD	AH		Issued for Review
Revision	Date	Prepared	Reviewed	Approved	Issued Status

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	MARPOL Annex I Oil and Oily Waste Port Reception Facility	
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1. Introduction

1.1 Purpose and Scope

This Traffic Management Plan (TMP) outlines the traffic control and traffic management procedures to be implemented by the Project Manager to manage potential hazards associated with the traffic environment during the project construction and operation.

1.2 Objective and Strategies

The objectives of the Traffic Management Plan are to ensure:

- The safety of the construction workers.
- All road users, including vulnerable road users, are safely guided around, through or past the work site.
- The performance of the public roads is not unduly impacted and the disruption and inconvenience to all road users are minimised for the duration of the works.
- Impacts on users of the road and adjacent properties and facilities are minimised.

In an effort to meet these objectives the Traffic Management Plan will incorporate the following strategies:

- Providing a sufficient number of traffic lanes to accommodate vehicle volumes.
- Ensuring delays are minimised.
- Ensuring all road users are managed including motorists, pedestrians, cyclists, people with disabilities and people using public transport.
- Ensuring work activities are carried out sequentially to minimise adverse impacts.
- Provision will be made for works personnel to enter the work area in a safe manner in accordance with safety procedures.
- All entry and exit movements to and from traffic streams shall be in accordance with the requirements of safe working practices.

2. Project overview

Clean Marine Group (CMG) are building a Port Reception Facility (PRF) on Grand Bahama to process MARPOL Annex1 oil and oily waste. The PRF will be constructed on reclaimed land within the Freeport Harbor precinct. Waste oil will be received from trucks to the facility for processing. The waste processed will produce merchantable oil and re-usable water which will be made available to other Freeport companies and users. The re-processed water will be provided in various grades which will allow optimal use of this limited resource.

The site location for the CMG facility is located on the western side of Freeport Harbour on Parcel 2 of Basin 3 (Figure 1). The site more specifically is to the west of the Freeport Container Port offices and encompasses 4.12 acres. This site is zoned heavy industry by the Grand Bahama Port Authority's Freeport Land Use Masterplan. Therefore, this development suites the current zoning designation. The survey drawing for the site is presented as Figure 2 in the Figures section of the report.

The CMG property is bounded to the east by the Freeport Container Port office building and parking lot. To the west Basin 3, to the south Parcel 4 (vacant land owned by Freeport Harbour Company) and to the north vacant land. The nearest residence is located in Hepburn Town, which is located approximately 0.66 miles to the southwest.

The photograph below shows the location of the proposed Clean Marine MARPOL treatment plant.

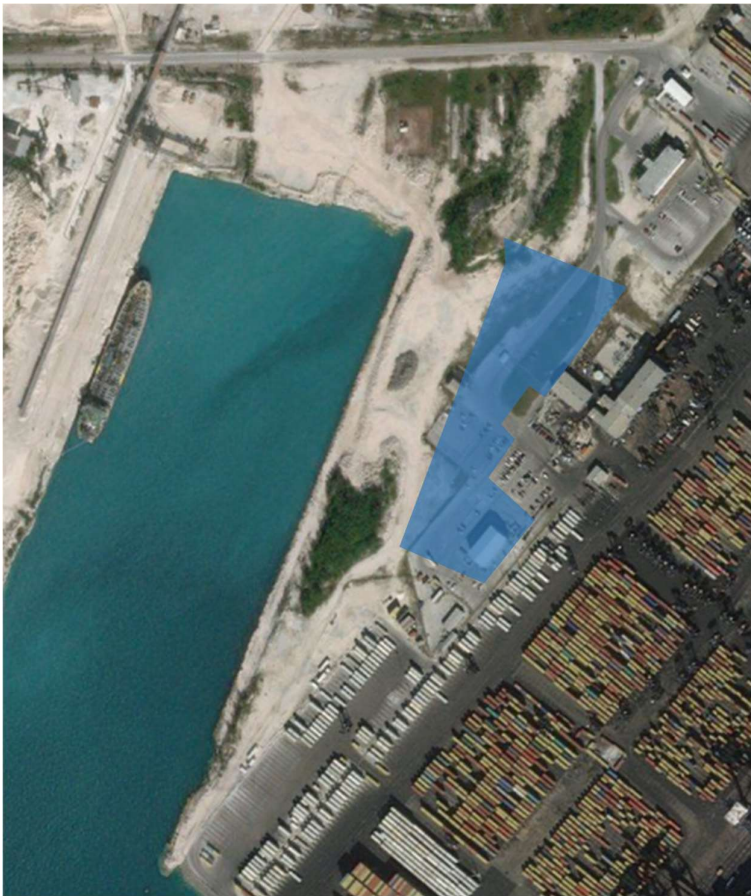



Figure 1 Site Location


	MARPOL Annex I Oil and Oily Waste Port Reception Facility	
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2.1 Project Details, Site Assessment and Site Constraint /Impacts

ITEM	DESCRIPTION
Project	MARPOL Annex I Oil and Oily Waste Port Reception Facility
Location	Basin 3, Freeport Grand Bahama
Road Classification, Existing Speed Limit	Minor road
Road Authority	Grand Bahama Port Authority
Local Government	Grand Bahama Port Authority
Principal	Clean Marine Group
Prime Contractor	TBA
Sub-Contractor	TBA
Scope of Works	Full greenfield facility
Staging of Work / Temporary Traffic Management	On site
Project Date	July 2021 – Dec 2022
Hours / Days of Work	8 hours / 5 days
Other Constraints	Bahamas hurricane season Importation of materials
Concurrent/adjacent Works or Projects	Freeport Container Terminal works

2.2 Existing Traffic and Road Environment

ITEM	DESCRIPTION
Traffic Volume and Composition	Container port trucks
Existing road configuration	Single lane, sealed
Existing pedestrian / cyclist facilities	None

	MARPOL Annex I Oil and Oily Waste Port Reception Facility	
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2.3 Overview of Proposed TTM

The works will take place on the CMG Basin3 site hence no public temporary traffic management will be required. There will be signs placed on the main road to indicate that works are on-going and that higher traffic can be expected.

2.4 Project Representatives

POSITION	NAME	CONTACT DETAILS
Road Authority Representative	TBA	
Local Government	TBA	
Project Manager / Prime Contractor	TBA	
Site Supervisor/Manager	TBA	
TMP Implementation	Tien Do	tien.do@cleanmarinegroup.com

The TMP will be implemented by Clean Marine Group and the selected contractors.

3. Risk management

The following details the preliminary assessment of site hazards likely to be encountered, the level of risk associated with each and the control proposed. Note that the risk level is the level of assessed risk *without* the controls in place. The controls listed have been determined as being appropriate in reducing the risk to a level that is acceptable.

The hierarchy of control has been utilised to ensure that the highest practicable level of protection and safety is selected:


- Elimination
- Substitution
- Isolation
- Engineering
- Administration
- Personal Protection Equipment

In evaluating the options, a key consideration is whether the option takes traffic around, through or past the worksite.

3.1 Risk Classification Tables

QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	Mid-block hourly traffic flow per lane is equal to or less than the allowable lane capacity detailed in AGTTM. No impact to the performance of the network. Affected intersection leg operates at a Level of Service (LoS) of A or B. No property damage.
2	Minor	Mid-block hourly traffic flow per lane is greater than the allowable road capacity and less than 110% of the allowable road capacity as detailed in AGTTM. Minor impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of C. Minor property damage.
3	Moderate	Midblock hourly traffic flow per lane is equal to and greater than 110% and less than 135% of allowable road capacity as detailed in AGTTM. Moderate impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of D. Moderate property damage.
4	Major	Midblock hourly traffic flow per lane is equal to and greater than 135% and less than 170% of allowable road capacity as detailed in AGTTM. Major impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of E. Major property damage.

	MARPOL Annex I Oil and Oily Waste Port Reception Facility	
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5	Catastrophic	Midblock hourly traffic flow per lane is equal to and greater than 170% of allowable road capacity as detailed in AGTTM. Unacceptable impact to the performance of the network. Intersection performance operates at a Level of Service (LoS) of F. Total property damage.
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OSH QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Level	Consequence	Description
1	Insignificant	No treatment required
2	Minor	First aid treatment required.
3	Moderate	Medical treatment required or Lost Time Injury
4	Major	Single fatality or major injuries or severe permanent disablement
5	Catastrophic	Multiple fatalities.

QUALITATIVE MEASURES OF LIKELIHOOD

Level	Likelihood	Description
A	Almost certain	The event or hazard: is expected to occur in most circumstances, will probably occur with a frequency in excess of 10 times per year.
B	Likely	The event or hazard: Will probably occur in most circumstances, will probably occur with a frequency of between 1 and 10 times per year.
C	Possible	The event or hazard: might occur at some time, will probably occur with a frequency of 0.1 to 1 times per year (i.e. once in 1 to 10 years).
D	Unlikely	The event or hazard: could occur at some time, will probably occur with a frequency of 0.02 to 0.1 times per year (i.e. once in 10 to 50 years).

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E	Rare	The event or hazard: may occur only in exceptional circumstances, will probably occur with a frequency of less than 0.02 times per year (i.e. less than once in 50 years).
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IMPORTANT NOTE: The likelihood of an event or hazard occurring shall first be assessed over the duration of the activity (i.e. “period of exposure”). For risk assessment purposes the assessed likelihood shall then be proportioned for a “period of exposure” of one year.

Example: An activity has a duration of 6 weeks (i.e. “period of exposure” = 6 weeks). The event or hazard being considered is assessed as likely to occur once every 20 times the activity occurs (i.e. likelihood or frequency = 1 event/20 times activity occurs = 0.05 times per activity). Assessed annual likelihood or frequency = 0.05 times per activity x 52 weeks/6 weeks = 0.4 times per year. Assessed likelihood = Possible.

QUALITATIVE RISK ANALYSIS MATRIX – RISK RATING

	CONSEQUENCE				
Likelihood	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost certain (A)	Low 5	High 10	High 15	Very High 20	Very High 25
Likely (B)	Low 4	Medium 8	High 12	Very High 16	Very High 20
Possible (C)	Low 3	Low 6	Medium 9	High 12	High 15
Unlikely (D)	Low 2	Low 4	Low 6	Medium 8	High 10
Rare (E)	Low 1	Low 2	Low 3	Low 4	Medium 7

MANAGEMENT APPROACH FOR RESIDUAL RISK RATING

Residual Risk Rating	Required Treatment
Very High	Unacceptable risk. HOLD POINT. Work cannot proceed until risk has been reduced.
High	High priority, stakeholders and GBPA should be consulted to reduce risk.
Medium	Medium Risk, standard traffic control and work practices.
Low	Managed in accordance with the approved management procedures and traffic control practices.

4. Risk Register

The risk register can be found in CMG-BA3-O-XX-XXXX

5. Traffic Management Planning and Assessment

5.1 Traffic Assessment and Analysis

5.1.1 Traffic and Speed Data

A summary of recent traffic data is provide below:

Location	Vehicles per day (% heavy vehicles)	Date	Source
Container Port Road	[NUMBER] (%)	[DATE]	[Traffic Map]
Warren J Levarity Highway	[NUMBER] (%)	[DATE]	[Traffic Map]

5.1.2 Traffic Flow Analysis

The Warren J Lavarity Highway is a sealed single lane highway that is the primary access between the West End and the Freeport Downtown area. The junction with Freeport Container Port Road is a single lane roundabout. The main traffic flow is along with highway with minor traffic using the Freeport Container Port Road. These users are limited to Freeport Container Terminal and to a lesser extent, Bahama Rock. Bahama Rock have primary access from the highway but their facility crosses the Freeport Container Port Road to access the shiploading facility.

The traffic from the container port consists mainly of container trailers however this is lower than expected that this terminal is primarily a transshipment terminal, ie containers are offloaded from one ship and loaded onto another ship.

5.1.3 Temporary Speed Zones

The entrance to CMG site is located very close to the entrance of the container terminal thus traffic speeds will be slow naturally thus no further traffic speed reductions will be necessary on this road.

A worksite speed limit of 20mph within the construction site due to unsealed roads and changing nature of the worksite.

5.1.4 Existing Traffic signals

There are no traffic signals on Freeport Container Port Road. Warning signs that frequent construction traffic will be erected at the entrance to the site on Freeport Container Port Road.

5.1.5 Impact to adjoining network

There will be increased traffic on Freeport Container Port Road due to workers commuting to the site. Major equipment will be delivered to Freeport in containers therefore the transport for delivery will be a short journey along Freeport Container Port Road. Any oversized (breakbulk) equipment will be delivered and offloaded from the adjacent wharf area.

5.2 Road Users

5.2.1 Pedestrians

There are no pedestrian facilities along these two roads. No pedestrian factors have been considered.

5.2.2 Cyclists

There are no cycling facilities along these two roads. No cycling factors have been considered.

5.2.3 Heavy and Oversized Vehicles

The roads currently are used by oversized vehicles and not further modifications or allowances have been included.

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5.2.4 Existing Parking Facilities

Parking facilities will be provided and marked accordingly. All vehicles will be reversed parked on site to minimise risks. Parking facilities will be provided at the northern side of the site to ensure access to emergency escape routes.

5.2.5 Access to Adjoining Properties / Business

The container port currently uses a haul road that has been built on CMG lease. Discussions are currently underway with FHC regarding the timeframe on when this area will be returned to CMG. The construction and temporary facilities may utilise this haul road for construction purposes. Should this be acceptable to CMG and FHC, a meeting will be held to ensure traffic volumes can be adequately handled on the current road.

5.2.6 Rail Crossings

There are no rail crossings.

5.2.7 School Crossings

Not applicable.

5.2.8 Special Events and Other Works

There is currently a haul road as explained in section 5.2.5

5.2.9 Emergency Vehicle Access

Not applicable.

5.3 Road Safety Barriers

Not applicable.

5.4 Consultation and Communication / Notification

5.4.1 Other Agencies

Bahama Road Traffic Department

5.4.2 Public

CMG will consult with Freeport Container Terminal and Bahama Rock to ensure that they are aware of the construction duration. This will also allow those companies to provide CMG with feedback on any planned work or special requirements that they may be planning.

6. Site Assessment

6.1 Provision to Address Environmental Conditions

6.1.1 Adverse Weather


Weather is not expected to adversely impact on the effectiveness of the traffic control detailed on the attached TGS's. Notwithstanding this, Grand Bahama does experience hurriances where the season is from June to December. Should adverse weather conditions be encountered during the works, the following contingency plans should be activated.

Note: any adjustments to the plan shall be risk assessed.

6.1.1.1 Rain

In the event of rain, an on-site assessment shall be made and sign spacing and tapers may be extended by 25% to account for increased stopping distances. Slippery signs may be placed as required and all changes shall be recorded in the daily diary.

If rain occurs, Traffic Management Personnel shall inspect the site and where signage and / or devices are not clearly visible, signage may need to be adjusted to improve visibility or if necessary provide additional signage and delineation. Where stopping distances are adversely affected by wet surfaces, spacing between signs may need to be adjusted to provide increased reaction time for drivers. In cases where it is determined that the rain is so heavy that the risk is considered unacceptable, all work shall cease until rain has cleared. All changes shall be noted in the daily diary.

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6.1.1.2 Floods

Should works be affected by flooding to the extent that the worksite becomes impassable or risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site and direct traffic around the flooded area (under the direction of the project manager or traffic manager).

6.1.1.3 Other adverse weather (strong winds, thunder storms, etc.)

Refer to CMG-GBS-O-PR-0010-1 Hurricane Preparation as an example which is in place for the operations at the shipyard. This will be adapted to the construction and operations phases at Basin3.

6.1.2 Sun Glare

Where sun glare is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk from glare.

All changes are to be noted in the daily diary.

6.1.3 Fog, Dust and Smoke

Where fog, dust or smoke is identified as adversely affecting a driver's ability to sight signage and / or traffic control devices, sign locations may need to be adjusted and additional delineation and/or traffic control devices provided to address the risk. All changes are to be noted in the daily diary.

Should works be affected by fog, dust or smoke to the extent that risk is considered unacceptable, all work shall cease immediately and Traffic Controllers (and other personnel if necessary) shall be deployed immediately to close the site.

7. Safety Plan

7.1 Occupational Safety and Health

All persons and organisations undertaking these works or using the site have a duty of care under statute and common law to themselves, their employees and all site users, lawfully using the site, to take all reasonable measures to prevent accident or injury.

This TMP forms part of the overall project Risk Assessment, and provides details on how all road users considered likely to pass through, past, or around the worksite will be safely and efficiently managed for the full duration of the site occupancy and works.

7.2 Roles and Responsibilities

7.2.1 Responsibilities

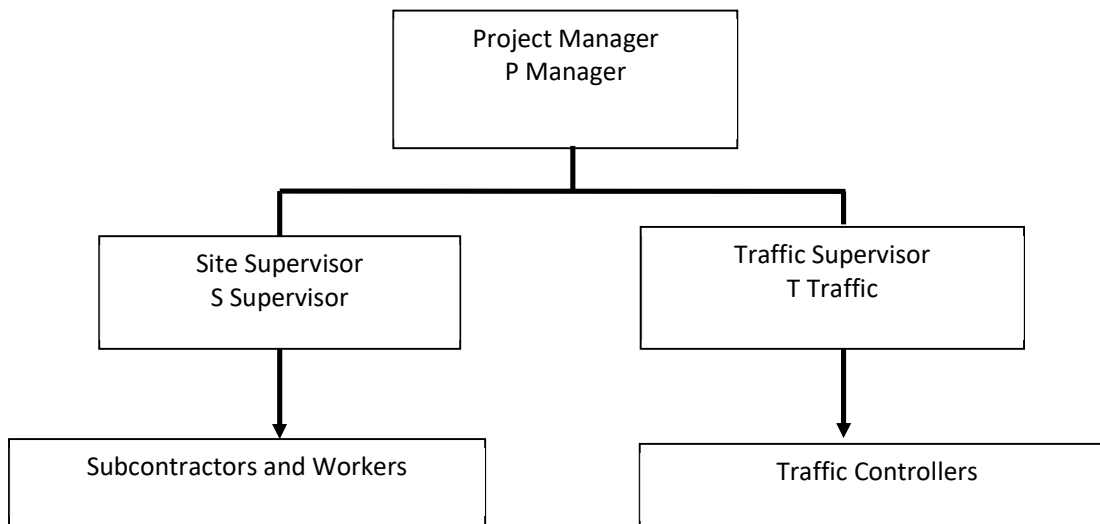
The Project Manager has the ultimate responsibility to ensure the TMP is implemented for the prevention of injury and property damage to employees, contractors, sub-contractors, road users and all members of the public.

The Project manager will ensure all site personnel are fully aware of their responsibilities, and that Traffic Controllers are appropriately trained and accredited and that sufficient controllers are available to ensure appropriate breaks are taken.

All personnel will not commence or continue work until all signs, devices and barricades are in place and operational in accordance with the requirements of the TMP.

7.2.2 Roles

The following diagram outlines the responsibility hierarchy of this contract.



7.2.2.1 Project Manager

The project manager shall:

- Ensure all traffic control measures of this TMP are placed and maintained in accordance with this plan and the relevant Acts, Codes, Standards and Guidelines
- Ensure suitable communication and consultation with the affected stakeholders is maintained at all times
- Ensure inspections of the temporary traffic management are undertaken in accordance with the TMP, and results recorded. Any variations shall be detailed together with reasons
- Review feedback from field inspections, worksite personnel and members of the public, and take action to amend the traffic control measures as appropriate following approval from the Road Authority's Representative
- Arrange and/or undertake any necessary audits and incident investigations

7.2.2.2 Site Supervisor

The site supervisor is responsible for overseeing the day-to-day activities, and is therefore responsible for the practical application of the TMP, and shall:

- Instruct workers on the relevant safety standards, including the correct wearing of high visibility safety vests
- Ensure traffic control measures are implemented and maintained in accordance with the TMP
- Undertake and submit the required inspection and evaluation reports to management
- Render assistance to road users and stakeholders when incidences arising out of the works affect the network performance or the safety of road users and workers
- Take appropriate action to correct unsafe conditions, including any necessary modifications to the TMP.

7.2.2.3 Workers and Subcontractors

Workers and Subcontractors shall

- Correctly wear high visibility vests, in addition to other protective equipment required (e.g. footwear, eye protection, helmet sun protection etc.), at all times whilst on the worksite
- Comply with the requirements of the TMP and ensure no activity is undertaken that will endanger the safety of other workers or the general public
- Enter and leave the site by approved routes and in accordance with safe work practices

7.3 PPE

All personnel entering the work site shall correctly wear high visibility vests, in addition to other protective equipment required on a site-by-site basis (e.g. protective footwear, eye protection, helmet, sun protection, respiratory devices etc.) at all times whilst on the worksite.

7.4 Plant and Equipment

All plant and equipment at the workplace shall meet statutory requirements and have the required registration, licences or certification where required. All mobile equipment shall be fitted with suitable reversing alarms. All workers will be made aware of the safe work practice at the time of the site induction.

7.5 Trip Hazards

The worksite and its immediate surroundings shall be suitably protected and free of hazards, which could result in tripping by cyclists or pedestrians. Hazards, which cannot be removed, shall be suitably protected to prevent injury to road users, including those with sight impairment. Where level differences are significant, suitable barriers, which preclude pedestrian access shall be used.

Where works extend beyond daylight hours and adjacent lighting is insufficient to illuminate hazards to cyclists or pedestrians, appropriate temporary lighting shall be installed.


The worksite shall be kept tidy to reduce the risk to workers.

8. Implementation

8.1 Traffic Guidance Schemes

The Traffic Guidance Scheme (TGS) outlined in Appendix F and listed below have been provided for the following stages to demonstrate the type of controls that will be implemented throughout the term of the contract. All sign and device requirements are shown on each TGS. Should the use of additional (not shown on the TGS or listing of devices) or reduced number of devices be required due to unforeseen needs, they shall be recorded within the Daily Diary as a variation to the TMP, following prior approval.

Construction Stages	Traffic Management Stages	TGS Number and version	Details <Include work description, temporary traffic management arrangements, times of day in place, and any other required information>
Stage 1	1.1		
	1.2		
	1.3		
Stage 2	2.1		
	2.2		
	2.3		

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8.2 Site Access for Work Vehicles

Construction and/or traffic management vehicles entering and exiting the traffic stream shall be mindful of the conditions that may affect the safety of these movements.

Access points shall be noted on the TGS and traffic controllers, work personnel and suppliers notified. Traffic Controllers may assist work vehicles enter and exit the work area.

All entry and exit movements will be in accordance with the Road Traffic Code and shall be undertaken in the following manner:

Vehicles shall:

- Decelerate slowly and signal their intention by indicator to leave the traffic stream;
- Activate the vehicle's rotating yellow lamp, where fitted, once a speed of 20mph has been reached and at least 50m prior to the exit location.
- Switch on the vehicle hazard lights once the vehicle is stationary.
- Where risks associated with unassisted exit or entry to or from the traffic stream are high, Traffic Controllers should be used to assist entry and exit movements.

Entry and exit manoeuvres shall be avoided in close proximity to intersections. Work personnel shall not cross traffic streams on foot unless absolutely necessary.

Construction or traffic management vehicles shall only be parked where indicated on the Traffic Guidance Scheme. Vehicles shall not obstruct paths and be parked an adequate distance from intersections or driveways to ensure clear sight lines remain for all road users.

8.3 Communicating TMP Requirements

This TMP document will be included with work packs for contractors. All new employees working on site will be briefed on this TMP.

9. Emergency Arrangements and Contingencies

9.1 Damage to Services

In the event that gas services are damaged, all work shall cease immediately, machinery and vehicles turned off and the area cleared of personnel as soon as possible. **Traffic Controllers** (and other personnel if necessary) shall be deployed immediately to ensure no traffic or other road users approach the area. The Police Service and relevant supply authority shall be called immediately. Damage to any other services shall be treated in a similar manner except machinery may remain operational and access may be maintained where it is safe to do so. All site personnel shall be briefed on evacuation and control procedures.

9.2 Emergency Contacts

In the event of an emergency the following relevant authorities must be contacted and advised of the nature of works, location, type of emergency and contact details for the site supervisor.

Emergency Service	E-mail/Website	Phone (Emergency)
Police Service		

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GPBA		
GB Power		

10. Monitoring and measurement

10.1 Daily Inspections

Prior to works commencing the Site Supervisor shall communicate the Traffic Management Plan to all key stakeholders and affected parties.

On completion of setting out the traffic control measures, the site is to be monitored for a suitable period of time. If traffic speeds on the approaches to the work site are assessed as being above the temporary posted speed zone for the work site, the Site Supervisor is to initiate action to modify the approach signage and tapers. All such actions are to be recorded in the Daily Diary.

A daily record of the inspections shall be kept indicating

- When traffic controls were erected,
- When changes to controls occurred and why the changes were undertaken,
- Any significant incidents or observations associated with the traffic controls and their impacts on road users or adjacent properties.


The Traffic Management Contractor shall ensure that personnel are assigned to monitor the traffic control scheme. Inspections shall at least satisfy the following requirements.

10.1.1 Before works start

- Confirm TMP and TGS are suitable for the day's activities;
- Inspect all signs and devices to ensure they are undamaged, clean and comply with the requirements depicted on the TGS;
- All lamps should be checked and cleaned as necessary;
- After any adjustments have been made to the signs and devices, conduct a drive through inspection to confirm effectiveness.

10.1.2 During work hours

- Designate and ensure that appropriate work personnel drive through the site periodically to inspect all signs and devices and ensure they are undamaged and comply with the requirements depicted on the Traffic Guidance Schemes;
- Attend to minor problems as they occur;
- Conduct on the spot maintenance/repairs as required;
- When traffic controllers are on the job, ensure they remain in place at all times. Relieve controllers as necessary to ensure attentiveness is retained;

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- During breaks or changes in work activities remove or cover any signs that do not apply (e.g. PREPARE TO STOP, Workers symbolic);
- Re-position signs and devices as required by work processes throughout the day and keep records of any changes.

10.1.3 Closing down each day

- Conduct a pre-close down inspection, allowing time for any appropriate maintenance works;
- Remove any unnecessary signage (e.g. Prepare to Stop, Symbolic Workers);
- Replace any unnecessary signage with appropriate delineation;
- Install barriers and lights where required;
- Drive through site and confirm all signs and devices are operating correctly with no misleading visual cues;
- Record details of inspection and any changes made to layout.

10.2 Records

A daily diary recording all inspections including variations to the approved TMP shall be kept using the Daily Diary. The Traffic Supervisor is to record all inspections made on a daily basis and at those times prescribed by the Traffic Management Implementation Standards. Upon completion of each day the Traffic Supervisor shall provide copies of the daily diary record to the Project Manager.

The Traffic Supervisor is to record all variations made to the approved Traffic Management Plan on a daily basis and indicate clearly the nature of the variations and the reason for the variations. Upon completion of each day the Traffic Supervisor shall provide copies

Appendix A – Record Forms

Traffic Guidance Scheme
Daily walkaround Checklist
Incident Report Form