SOHAR Guideline for Stormwater Management

SOHAR Port Area

2023 – Version 1.1

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1. Definitions

- Consultant: An environmental consulting company approved by the Environment Authority assigned by the tenant.
- Environmental approval: The permission given by Environment Authority to the tenant to practice a certain activity after ensuring its environmental integrity.
- SOHAR's Environment team: A team of environmental specialists from SIPC carrying out, administering, and controlling the quality of the Environment Affairs Unit.
- Stormwater management: a process of controlling the stormwater runoff within tenants' plots.
- Technical team: A team of civil specialists from SIPC carrying out, administering, and controlling the quality of the SOHAR assets and infrastructure (e.g., roads, stormwater channel, return cooling canal, etc.).
- Tenant: Any investor who is the owner of a source, area of work, or responsible for its operation or management within SOHAR Port and Freezone area.

2. Abbreviations

EA	:	Environment Authority in North Al Batinah
EIA	:	Environmental Impact Assessment
EMP	:	Environmental Management Plan
MISC	:	Majis Industrial Services Company
SIPC	:	Sohar industrial Port Company
SOHAR	:	SOHAR Port and Freezone Company
SPFA	:	SOHAR Port and Freezone Authority
SWRC	:	Seawater Return Canal
SPF	:	SOHAR Port and Freezone
CWWTP	:	Central Wastewater Treatment Plant

3. Introduction

3.1 About SOHAR Port and Freezone

SOHAR Port and Freezone (SOHAR) is a deep-sea Port and Freezone in the Sultanate of Oman, managed by Sohar Industrial Port Company (SIPC). It is one of the world's fastest-growing ports and freezones developments and lies at the center of global trade routes between Asia and Europe. SOHAR built six industrial clusters for heavy industries, light industries, textile, food, petrochemical, metal, and Circular economy cluster. Consequently, SOHAR plays a significant role in Oman's economic growth.

The port was originally built around three industrial clusters for metals, petrochemicals, and logistics, equipped with deep-water jetties capable of handling the world's largest ships. SOHAR has leading global partners that operate its container, dry bulk, liquid, gas, and general cargo terminals.

SOHAR Port infrastructure is designed to cope with the stormwater from the common areas, and stormwater management is a shared responsibility between SOHAR and SOHAR Port tenants.

3.2 Guideline motivation

There are different challenges experienced in SOHAR Port area during rain events. Those challenges are summarized but not limited to:

- Overflow of stormwater due to the low capacity of the stormwater collection system within the tenant plots and no designated space like rainwater or evaporation basin to store the stormwater, which could increase the risk of overflow.
- Chances to have contaminated stormwater by the process areas.
- Improper maintenance of stormwater collection system.
- Improper infrastructure design for a stormwater drainage system.
- Stormwater flows from the common area into the tenant's plot.
- Unclear requirements to get approvals to discharge stormwater in emergency cases.
- Unclear process flow and communication channels to follow to communicate regarding stormwater challenges and discharge in emergency cases.
- The growth of unwanted plants/vegetation in stormwater channels affects its efficiency.

Considering the above challenges and the increased frequency of rain events, a guideline becomes essential for better stormwater management.

3.3 Objectives

Stormwater management guideline is developed to:

- Document the best practices on stormwater management and discharge in emergency cases.
- Provide a clear guide on stormwater management within the tenant's plot to minimize the impact of stormwater on the operation.
- Enhance the stormwater management at SOHAR Port by explaining the required procedure to be followed in an emergency and obtaining the necessary approvals to discharge.

3.3.1 Guideline amendments

This guideline may be altered or amended by SOHAR Port and Freezone Authority (SPFA) every three years or when considered necessary or in view of proper or improved implementation, pursuant to the terms of the property suitable agreements and the most relevant version, including all the guidelines referred to, shall be applicable at all times.

4. SPF Rules and Regulations

SOHAR Port and Freezone have witnessed substantial growth and expansion in heavy industries, leading to more required attention to environmental management and sustainability.

Direct discharge of any industrial or domestic wastewater that does not meet the effluent discharge standards established by EA is prohibited. Effluent discharges from wastewater treatment facilities shall meet the applicable discharge standards or permit requirements. Compliance with such standards or permit requirements shall be the responsibility of the owner/operator of the facility[1].

In addition, SOHAR tenants are not allowed to use the SIPC infrastructure for stormwater discharge based on SIPC-tenant contracts. Accordingly, the responsibility of stormwater management is shared between SOHAR and port tenants by the following:

- SOHAR manages the stormwater in the corridors and the common area through its infrastructure.
- Tenants are responsible for managing the stormwater within their plots.

[1] Reference to SOHAR Rules and Regulations: https://soharportandfreezone.om/PDF/SOHAR_Rules_Regulations_2021.pdf

5. Infrastructure for Stormwater Management in Port area

Infrastructure in SOHAR Port can be classified into two main groups. Infrastructure for public or common areas and private or localized infrastructure within tenants' plots.

5.1 Common areas stormwater infrastructure

SOHAR infrastructure is designed to cope with the stormwater runoff accumulated from the common areas like the roads and corridor areas. The SOHAR stormwater channel is maintained by SOHAR Technical department to ensure its durability. In addition, the wadi protection canal is another functioning infrastructure that helps to have a better stormwater management from outside the Port area by controlling wadi streams (Annex 1: SOHAR Port map).

The future enhancement of the stormwater drainage system at SOHAR Port's northern side is already designed, and it will be constructed in 2023 with a full drainage system by gravity in Corridors S15 [Partially], S17, and S18, including new outfall in the existing service berth.

5.2 Tenants' stormwater management facilities

SOHAR Port area is occupied by a combination of different industries, including petrochemicals, iron and steel, terminals, and service providers (i.e., water desalination, water treatment plants, and power plants). Each has different operations, facilities, potential pollutants, plot sizes and locations. There are different stormwater systems implemented in each tenant plot. Those systems are summarized but not limed to the following:

- Separated stormwater collection systems from the oily water within the tenant plot.
- Using soak-away pits and/or permeable stormwater networks, which allows the stormwater to infiltrate into the soil. Only applicable for clean stormwater (not from the process areas) to avoid any chance of soil and groundwater contamination.
- Underground storage tanks located in different areas within the tenant plot to avoid the accumulation of stormwater inside the plot.
- High design capacity of a stormwater collection system.
- Multiple ponds for stormwater collection.

6. Stormwater Management Guidelines and Requirements

Climate change resulted in temperature rise, more frequent cyclones, and heavy rain events increase, which have become commonly observable worldwide. These changing climatic patterns are already being experienced in Oman, with multiple cyclones reaching our coastal lines in the last two decades and causing more intensive rainfall than in the past. Proper stormwater management is essential to protect the tenants and SOHAR infrastructure from heavy rainfall events to maintain Port resilience towards climate change. Managing the stormwater runoff in the port area is critical; therefore, the discharge of stormwater will be dealt with case by case.

The subsections below describe the procedures to be followed to reduce the impact of stormwater accumulation and overflow inside the tenant's plot.

6.1 Precaution measures

Preventive maintenance of stormwater system is beneficial for maintaining its efficiency and reducing the risk of stormwater overflows. Therefore, the below precaution measures shall be taken into consideration before any rainfall events happen:

- Regular maintenance of the stormwater collection system within the plot and keep stormwater networks clean from garbage, plants, or any other obstacles to ensure smooth water flow and avoid stormwater overflow.
- Check and ensure low water levels in stormwater ponds or tanks.
- Take the necessary action to lower the chances of mixing the stormwater with any other type of water or contaminants.
- Keep track of the weather conditions updates and forecast from the Civil Aviation Authority, Directorate General of Meteorology[2].
- Keep track of the weather conditions update, which circulates by SOHAR.
- Each tenant shall assign at least one person to monitor to monitor their stormwater collection system condition closely before, during, and after the rain event.

6.2 Discharge to MISC

Majis Industrial Services Company (MISC) is a water service provider responsible for collecting, treating, and reusing all water streams generated by tenants based on MISC water specifications.

Tenant shall connect their stormwater system to the MSIC CWWTP and notify MISC when they discharge any stormwater. Before discharging to Majlis, a network sample must be taken and aligned with MISC discharge parameters. In Case both tenant's infrastructure and the MISC facility were incapable of handling the stormwater, the situation could escalate to an emergency and discharge of stormwater request to be followed.

[2] CAA, Directorate General of Meteorology website: https://met.gov.om/opencms/export/sites/default/dgman/en/home/

6.3 Emergencies: stormwater discharge

In an emergency where business continuity might be affected at any plot due to an accumulation of stormwater, tenants can approach relevant authorities to get the necessary approvals, as listed below:

- Obtain approval from SOHAR (Technical and Environment team) to ensure safe conditions on SOHAR infrastructure and marine environment.
- Obtain EA approval.

6.4 Tenant request to discharge

Tenants shall send an email request[3] including the following data to obtain SOHAR and EA approvals:

- Quantity of water to be discharged.
- Water discharge estimated flow rate.
- Proposed detailed discharge methodology (direct discharge through SOHAR infrastructure).
- Visual observation (pictures recommended) of the stormwater that needs to be discharged. Please note that tenants must inform if contamination is found in their stormwater.
- Water lab test results (if available).

Tenants shall consider three main infrastructures in the proposed discharge methodology: stormwater canal, wadi protection canal and tenant infrastructure in case of direct discharge to the sea.

6.4.1 Approval from SOHAR and EA

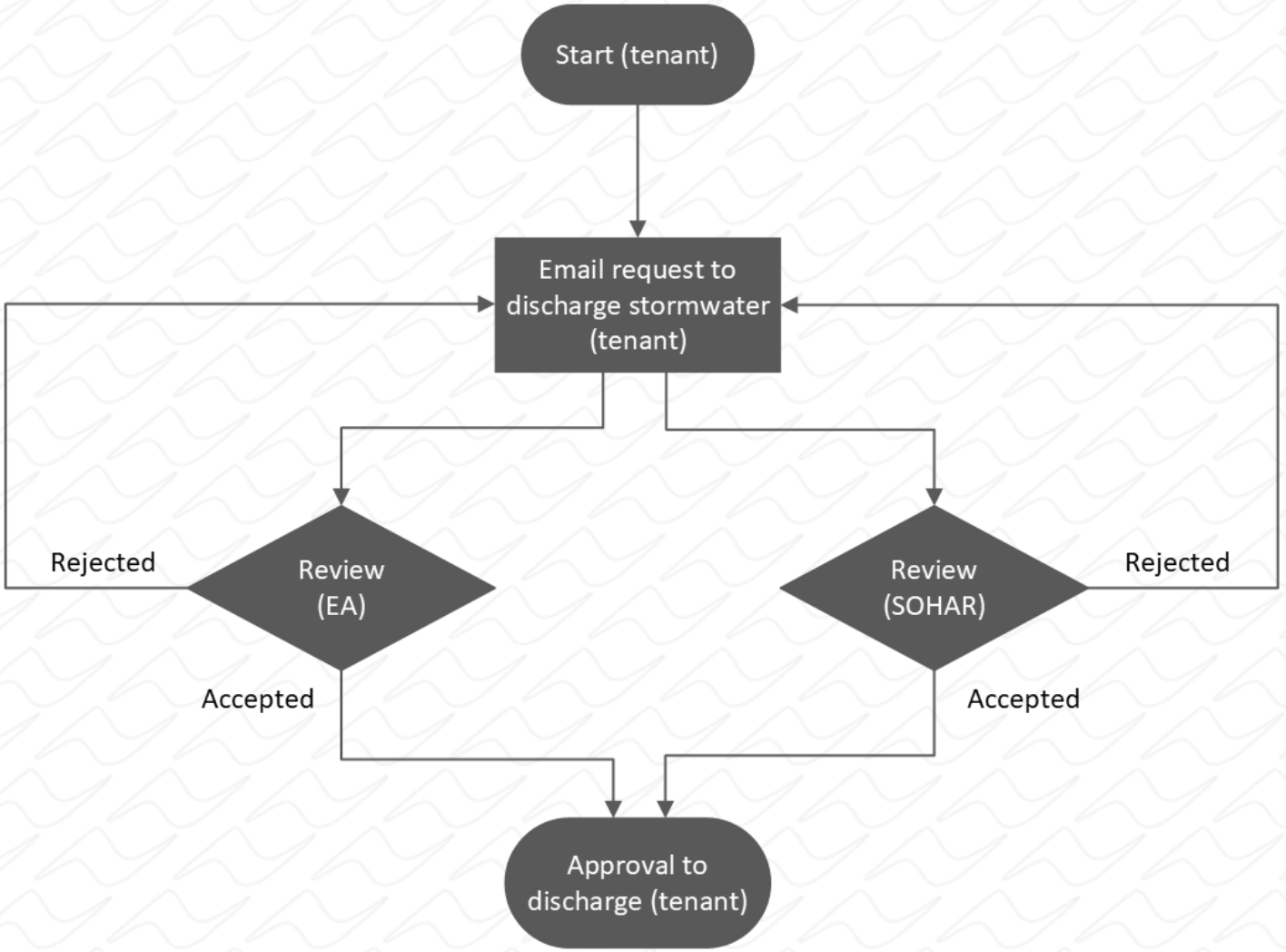
The tenant's email request will be directly received by EA and SOHAR teams simultaneously and will be reviewed in parallel.

Stormwater shall not be discharged in any situation without obtaining approval from SOHAR. In an emergency, SOHAR team shall review and respond immediately to the tenant's request. SOHAR will investigate each case separately. However, SOHAR owns the right to reject any tenant's request for stormwater discharge.

EA will review the tenant's request, and they might or might not request a lab test from a third party. EA shall review and respond to the tenant's request as soon as possible.

[3] Stormwater discharge request to be sent to: stormwater@soharportandfreezone.com

6.4.2 Process flow chart for stormwater discharge in emergency cases



7. Recommendations

Below is a list of recommendations to help on lowering the impact of stormwater accumulation during the rain event:

- Tenants shall consider this guideline document to manage the stormwater within their plots.
- Tenants shall develop an emergency plan for the risk of flooding and their emergency response procedure considering the worst-case scenarios.
- Tenants shall keep SOHAR team updated in case of any emergency faced by the tenant on stormwater accumulation or overflow.
- Tenant shall assess the capability and suitability of their existing drainage system against the recent rainfall records and shall work proactively to enhance their stormwater collection system accordingly.
- Tenants shall be transparent with SOHAR and EA regarding their stormwater condition if any contamination is expected, allowing all parties to devise suitable solutions in such cases.
- Tenants shall consider the green infrastructure within their plots.
- New tenants shall consider climatical changes and the increased frequency of rain events in the area when designing the stormwater management system in their plots.

8. Contact list

Company name	Name	Phone number	Email
SOHAR & EA	Emergency Centre	99342699	stormwater@soharportandfreezone.com
MISC	Younis Al-Kiyumi	95949306	younis.alkiyumi@miscoman.com
	Ali Al-Hatali	92667950	ali.al-hatali@miscoman.com

Annex 1: SOHAR Port Map

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