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ARAB ENGINEERING BUREAUS

1 ENVIRONMENTAL FRAMEWORK

1.1 OVERVIEW

1.1.1 Purpose

- 1 In the context of this document, environmental management pertains to the protection, conservation, and efficient use of natural resources and avoidance or minimization of their degradation with multidisciplinary considerations from local to global levels.
- 2 The purpose of this section is to provide an overarching framework to exercise due diligence throughout a project lifecycle that ensures rational use of natural resources and the quality of the existing environment is improved, or at least maintained, during construction activities across all industry sectors.
- 3 The purpose of QCS is to provide as a general technical guide for acceptable construction work practices in the State of Qatar, considering this; any addition for technology, material, specification, standard that are not mentioned in this section or their modification, shall be subject to approval as stated in the introduction of QCS (00-02)
- 4 Furthermore, this overarching framework of environmental management aims to support the State of Qatar's wider strategic national objectives, international commitments, and path to sustainable development.

5 **NOTE: This part is not mandatory unless the Engineer obliges, either part or all of it.**

1.1.2 Scope

- 1 The scope of this section begins by outlining key principles and performance objectives, as well as Environmental Management System (EMS) requirements. The scope also outlines project lifecycle considerations, including site and risk assessments, sustainability, permitting, stakeholder engagement and coordination, procurement, and project staffing as necessary components to sound environmental management. In addition, applicable legislation, standards, and guidance at the national and international levels are provided as references. Finally, the essential environmental aspects to assess are listed, along with specifications to develop the necessary control plans for construction.

1.1.3 Guidance

- 1 This section serves as a comprehensive set of minimal requirements that may be applied to projects across the construction industry. However, some specifications/standards are not prescriptive, but provided as recommendations to be applied as deemed appropriate dependent on the project scope, scale, and complexity.
- 2 This section should also be read in conjunction with the references provided below, other QCS chapters, and associated statutory and strategic documents at national and international levels.

1.2 GENERAL REQUIREMENTS

1.2.1 Environmental Key Principles

- 1 The State of Qatar's core environmental policy components rest on the precautionary, prevention, and polluter pay principles, which are embedded, directly and/or indirectly, in many other national strategies and international agreements.
 - (a) The precautionary principle shall apply to situations with scientific uncertainty, following an objective evaluation, about a suspected risk to human or environmental health emanating from a particular action, with implementation measures that are non-discriminatory and proportionate.
 - (b) The prevention principle shall apply to protect the ecosystem and organisms, as well as land, marine, and atmospheric resources, while also allowing for their use in sustainable productivity, but not compromise the integrity and coexistence of other species and natural habitats.
 - (c) The polluter pays principle shall apply the cost of any resulting damage to the existing natural environment to the responsible party.

1.2.2 Environmental Performance Objectives

- 1 In accordance with the State of Qatar's national strategies and international commitments, environmental management shall be targeted to achieve at least three basic performance objectives as listed below.
 - (a) Comply with all statutory requirements as stipulated by the regulating authorities;
 - (b) Commit to sustainability through an approach that integrates all dimensions of life;
 - (c) Implement best practices and work towards continuous improvement.

1.2.3 Environmental Management System

- 1 An EMS is a core and crucial component of environmental management that shall be developed and implemented in accordance with ISO 14001 specifications or a similarly recognized standard, although formal certification is not mandatory.
- 2 An EMS shall be structured to encompass all environmental management considerations with plans, policies, and a set of tools as basic elements to fulfil statutory requirements, associated obligations, and best practices relevant to a project.
- 3 An EMS shall be clearly defined in the form of a CEMP prepared by qualified/competent third party environmental consultant and approved by the relevant authority (or its delegate) prior to the start of construction.
- 4 A CEMP shall be tailored based on a project's scope, scale, and complexity and, at a minimum, include the below listed topics.
 - (a) Introduction: Provide project context, background, and purpose, as well as identify the proponent and other relevant parties (i.e. Consultant, Contractor, Sub-Contractor, etc.);
 - (b) Project Description: Provide project location, scope, planned activities, schedules, milestones, etc.;

- (c) Policy: Provide project statement applicable to environment, ideally with a pledge to natural resource protection/conservation/efficiency, health and safety, and statutory compliance;
 - (d) Environmental Commitments: Provide project commitments to environmental management, preferably with specific targets;
 - (e) Roles and Responsibilities: Provide project chain of command with a description and chart of roles and responsibilities, positions, and contact details of relevant organizations and individuals involved in environmental management;
 - (f) Legal and Other Register: Provide project summary of applicable statutory requirements, standards, agreements (i.e. contractual), and permits with associated activities;
 - (g) Environmental Aspects: Provide project baseline conditions, impacts, and control plans with associated activities to the surrounding environment and sensitive receptors using relevant methodologies, data, etc. (referencing Section 32-Part II of this document for further guidance);
 - (h) Training and Awareness: Provide project approach identifying needs and schemes, frequency, and levels of training and awareness, including information on trainer and trainees, to ensure all relevant individuals are aware of the EMS and its requirements;
 - (i) Audits and Inspections: Provide project internal and external audit and inspection scopes and schedules, specific procedures on raising and recording non-conformances and corrective/preventive actions, and identification of responsible parties to address requirements to ensure and/or determine appropriate implementation of EMS related requirements;
 - (j) Monitoring and Reporting: Provide information on monitoring and reporting methods, frequency, and recording, at a minimum, along with associated templates, trackers, tools pertaining to all EMS related activities;
 - (k) Emergency Response Plans: Provide project risk scenarios and procedures for emergency situations and responses for activities that could impact human and/or environmental health and safety with relevant coordinators and contact information.
 - (l) Documentation and Review/Updates: Provide project procedures for review of EMS with stipulations to maintain copies and accessibility of the Environmental Plan and associated updates and records as appropriate
- 5 An EMS shall also include site and risk assessments, sustainability, permitting, stakeholder engagement and coordination, procurement, and project staffing as other integral features, in addition to any other topics deemed appropriate by the contracting authority/proponent.

1.3 PROJECT LIFECYCLE CONSIDERATIONS

- 1 To ensure effective environmental management at the time of construction, site and risk assessments, sustainability, permitting, stakeholder engagement and coordination, procurement, and project staffing are all mandatory requirements of an EMS that shall be initiated at the planning or concept design stage and considered throughout the project lifecycle.

1.3.2 Environmental Site and Risk Assessments

- 1 Site and risk assessments shall be conducted at the beginning of a project lifecycle and regularly reviewed.
- 2 The project is required to undergo a site assessment, regardless of whether or not field studies will be conducted, to collect baseline data of the surrounding area.
- 3 The project equally requires a risk assessment, in collaboration with other disciplines, to support informed decision making and policy evaluations regarding pertinent issues such land use, hazardous installations, and resources.
- 4 The environmental aspects to be assessed are outlined in Section 32-Part II and the relevant categories shall be applied as per the scope of the project.
 - (a) *Environmental Site Assessment:* With the aim of understanding the areas vulnerable as a consequence of the project, the site assessment shall include, at a minimum, the below items.
 - (i) Identify sensitive receptors;
 - (ii) Locate contaminated/potentially contaminated areas;
 - (iii) Determine past and present uses of the area;
 - (iv) Review any relevant files related to the site (i.e. owner, authority, etc.);
 - (v) Interview/Coordinate with relevant stakeholders (i.e. property owners, etc.)
 - (b) *Environmental Risk Assessment:* With the aim of characterizing the potential adverse impacts to the environment as a consequence of the project, the risk assessment shall include, at a minimum, the below items.
 - (i) Planning - Acquire relevant information about the site and develop a methodology to approach and execute risk management;
 - (ii) Identification - Describe any, direct or indirect, hazardous situations that could lead to an adverse effect on the environment, human health, or quality of life;
 - (iii) Analysis - Prioritize risk based on probability of environmental hazard being realized for both short-term and long-term consequences;
 - (iv) Response - Develop an action plan with options to reduce or remove threats to acceptable levels;
 - (v) Monitoring & Control - Track effectiveness of action plans throughout the project
- 5 The site assessment shall be incorporated in an EMS and considered in the development of the project's design and construction implementation.
- 6 Information from the site assessment, along with design details and schedules, are required in order to conduct a risk assessment to adequately identify and characterize the nature of existing and potential adverse effects to humans and the environment resulting from exposure to hazards.
- 7 The risk assessment shall be compiled and maintained in a register and/or method statement throughout the project lifecycle and provided to the project proponent to determine an informed decision.

- 8 Reference other relevant QCS chapters regarding asbestos, structure or system failures, or other high risk items for additional guidance on appropriate assessments and management.

1.3.3 Sustainability

- 1 Ideally, sustainability should be included as an inherent part of the project's design.
- 2 While this section does not dictate prescriptive sustainability measures, the deliberation of four major pillars shall be included in the development and implementation of an EMS as listed below.
- (a) *Human Development*: Evaluate the project's potential contributions and/or effects to the local people and communities;
 - (b) *Social Development*: Evaluate the project's ability to preserve and/or enhance cultural and/or archaeological heritage;
 - (c) *Economic Development*: Evaluate the project's suitability for existing and future land-use and growth;
 - (d) *Environmental Development*: Evaluate the project's impacts to all resources, habitats, and species.
- 3 Practical application of sustainability options, such as the selection of durable materials or technologies and calculating carbon/ecological footprints, will vary among disciplines and be dependent on the scope and scale of the project. However, all selected options shall be adopted in accordance with prevailing statutory requirements and specifications, national strategies and agreements, as well as best practices.
- 4 Regardless, of the selected option, the project shall demonstrate the consideration and assessment of sustainability at least in the construction phase as deemed appropriate by the contracting authority/proponent (i.e. via a report or tools).
- 5 The use of sustainability tools, such as GSAS®, CEEQUAL®, LEED®, ENVISION®, GreenRoad® may be applied, even without formal verification.
- 6 Furthermore, statistical data shall be collected to monitor the consumption of energy, water, and waste, at a minimum, during the construction phase of a project.

1.3.4 Permitting

- 1 As a statutory requirement, each project scheduled for construction shall obtain an environmental permit prior to the start of the Contractor's initiation of activities.
- 2 An Environmental Permit Application (EPA) shall be submitted by the contracting authority/proponent to the regulating authority, Ministry of Municipality and Environment, at beginning of the project lifecycle, ideally during the planning or concept design stage due to the potentially lengthy process.
- 3 The MME will respond with a determination that the project is permitted with conditions, or requires an Environmental Impact Assessment (EIA) study.
- 4 If an EIA study is necessary, then the contracting authority/proponent shall submit a Terms of Reference and Scope of Works (ToR & SoW) report outlining the assessment methodology and submit to MME for approval.

- 5 Upon approval of the ToR & SoW report and the completion of the field studies, the project proponent shall submit the final EIA to the MME-EAD to obtain the environmental permit.
- 6 Reference **Section 32-Part II** for guidance on the necessary environmental aspects to assess and the targets to achieve in construction.
- 7 Note that additional requests, guidelines, specifications, etc. may be required by the MME-EAD to support the permitting process.
- 8 An EPA shall also be submitted to the relevant MME departments for each construction activity, such as dewatering, micro-tunnelling, crushing and screening, laydown areas, asphalt plants, etc. in order to obtain a permit.
- 9 The validity of all environmental and miscellaneous construction permits shall be maintained and associated monitoring reports produced until the specific activities are concluded.
- 10 Depending on the project's scope of works, permits may also be required during the operational phase and necessary coordination with the relevant parties shall also be conducted.
- 11 A Project Close Out Report with the associated permits shall be issued to the MME or its delegate for information upon completion of works.

1.3.5 Stakeholder Engagement and Coordination

- 1 Engagement and coordination with relevant stakeholders shall be initiated in the planning and/or concept design stage of a project as additional requirements, such as approvals on drainage strategies, land acquisitions, sensitive/protected areas, etc. may be obligatory to support the environmental permitting process and are often necessary prior to the start of construction.

1.3.6 Environmental Procurement

- 1 The environmental criteria stipulated in the tendering and procurement of contracts shall be applied, as long as the contracting authorities/proponent follow the State of Qatar's statutory requirements and not compromise other applicable international agreements or commitments.
- 2 Environmental criteria can generally be introduced through five different mechanisms as listed below. While items (a) and (d) are optional, (b), (c), and (e) are compulsory.
 - (a) *Contract Scope of Works:* The most direct way of introducing environmental criteria in the tendering and procurement process is by mentioning the information in the scope of works, which will reflect transparency and demonstrate the contracting authority's/proponent inclination to select more sustainable options;
 - (b) *Contract Technical Specifications/Standards:* The inclusion of an EMS shall be defined in the technical specifications as a requirement and any additional environmental criteria deemed appropriate, along with measurable conditions the product/service must achieve (such as functionality, process methods, etc.) that will be clear enough to allow for a proper and justifiable evaluation;

- (c) *Contract Candidate Selection Process:* Environmental criteria in the selection process of candidates shall be applied either through exclusion or technical capacity. Exclusion of candidates in the selection process applies, at a minimum, if a bidder has committed and been prosecuted for an environmental transgression. Technical capacity in the selection process applies to minimal experience of personnel needed to fulfil environmental obligations under the contract, including the implementation of an EMS and project staffing considerations;
- (d) *Contract Award:* During the contract award stage, the contracting authority/proponent can elaborate on additional preferences of environmental criteria, rather than the minimal requirements as listed in the technical specification/standards (such as a more sustainable product/service). In this case, environmental criteria should be related to the contract subject matter, objectively quantifiable, weighted in relation to other requirements, and clearly defined in the tenders.
- (e) *Contract Performance Clause:* The contracting authority/proponent shall include performance clauses that relate to environmental obligations and statutory compliance, with financial penalties due to failure. The development of the performance clauses are the responsibility of the contracting authority/proponent (or its delegate). The requirements cannot only pertain to the fulfilment of technical specifications/standards during the tendering and procurement stages, but the actual implementation of environmental criteria on the project site during construction stage.

1.3.7 Project Staffing

- 1 A suitably qualified Environmental and Sustainability Manager/Officer (ESM/ESO) shall be appointed to establish, implement, maintain, and improve the EMS requirements.
- 2 The project scope and technical specifications/standards shall determine the level of qualifications and experience required for the ESM/ESO positions, but particular education and training, as well as expertise in relation to the environmental and sustainability disciplines are required, including, but not limited to the below listed items.
 - (a) Environmental engineering/science/policy degrees
 - (b) Local legislation and regulations
 - (c) ISO 14001 specifications/standards
 - (d) Assessment of environmental aspects
 - (e) Measurements, monitoring, and reporting of environmental aspects
 - (f) Natural resource management
 - (g) Emergency response procedures

1.4 LEGISLATION, STANDARDS, AND GUIDANCE

- 1 Relevant national and international legislation, regulation, and agreements shall be a core part of an EMS and taken into account throughout a project lifecycle.
- 2 The below table provides a list of legislation, standards, and guidance, but is indicative only.
- 3 It is the Contractor's responsibility to determine the appropriate legislation, standards and guidance appropriate to the project and apply the necessary requirements on site to ensure statutory compliance.

- 4 In the absence of appropriate legislation, recognized standards and best practices shall be applied.

Qatar Legislation

Law No. 30 of 2002 (Protection of the Environment) Articles 22-60: hazardous wastes & materials, (solid, liquid, gas) Article 33: emissions from burning of materials (solid/liquid/gas) Article 61: consideration of distance and wind direction from populated areas in determining the project location. Article 68: wastes or soil produced as a result of excavation, digging, building, or demolishing should be stored, covered, or transported appropriately to minimize its spread and prevent air pollution Chapter 3: protection of water environment from pollution
Executive by Law No. 4 of 2005 Annexes Annex No. 1: categories and divisions of public and private development projects that cause environmental damage Annex No. 2 (1-20): application forms and procedures Annex No. 3: standards and criteria for environmental protection Annex No. 3/1: air quality standards for Qatar. Annex No. 3/2: standards and criteria for waste water quality Annex No. 3/3: standards & criteria for drinking water Annex No. 3/4: standards of seawater quality Annex No. 3/5: noise emissions standards for Qatar Annex No. 4: criteria and specifications of the hazardous materials when disposed of in the water environments
Law No. 1 of 1993: on the protection from agricultural land grading and beach sand removal and dredging Law No. 2 of 1980: on antiquities Law No. 4 of 1983: on the sustainable utilization of living aquatic resources Law No. 8 of 1974: on public hygiene (updated 2017) Law No. 19 of 2004: on the protection of wildlife and its natural habitats Law No. 21 of 2007: on the control of substances that deplete the ozone layer Law No. 24 of 2006: on regulating fertilizers and soil conditions in Gulf Cooperation Council Countries. Law No. 32 of 1995: on the conservation of the floral ecosystem Decree No. 10 of 1968: on pesticides

National Guidance

Qatar National Development Strategy (QNDS) 2011–2016
Kahramaa Best Practices for Conservation of Electricity and Water (2012)
Qatar National Biodiversity Strategy & Action Plan 2015-2025 (MME, 2014)
Construction Dewatering Guidelines, Management of Construction Dewatering (PWA, 2014)
Qatar Highways Design Manual, Vol.3. Part 21 Environmental (2015)
TSE Reuse Guidelines (PWA, 2016)
GSAS Construction Management: Guidelines & Assessment 2017-v2.1-Issue 3.0
Qatar National Vision (QNV) 2030

MME EIA Technical Guidelines
International Conventions
International Convention for the Prevention of Pollution of the Sea by Oil (London, 1954):
Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Iran, 1971):
Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington D.C., 1973)
Convention Concerning the Protection of the World Cultural and National Heritage (Paris 1974)
Regional Convention for Cooperation on the Protection of the Marine Environment (Kuwait, 1978)
Convention on the Law of the Sea (1982)
Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and their Disposal (1989)
Montreal Protocol on Substances that Deplete the Ozone Layer (1985 and its annexes, 1990 and 1992) (Emiri Decree No. 23 of 1999)
The Convention for the Protection of the Ozone Layer (Vienna, 1985)
Protocol from the Protection of the Marine Environment against Pollution from Land-Based Sources (Kuwait, 1990)
The Arab Declaration on Environment and Development and Future Perspectives (Cairo, 1991)
Convention on biological diversity (Rio de Janeiro, 1992)
United Nations Framework Convention on Climate Change (1992)
United Nations Convention to Combat Desertification (Paris, 1994)
The Montreal Protocol on Substances that Deplete the Ozone Layer and Amendments (Montreal, 1996)
The Kyoto Protocol (1997)
Stockholm Convention on Persistent Organic Pollutants (2001)
The Paris Agreements, of the United Nations Framework Convention on Climate Change (2015)
International Standards
BS 8001 - Framework for implementing the principles of the circular economy in organizations. Guide
ISO 14001- Environmental management systems — Requirements with guidance for use
ISO 14055-1- Environmental management — Guidelines for establishing good practices for combatting land degradation and desertification — Part 1: Good practices framework
ISO 14046 - Environmental management — Water footprint — Principles, requirements, and guidelines
ISO 14067- Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
ISO 15001- Anaesthetic and respiratory equipment — Compatibility with oxygen
ISO 16075-1- Guidelines for treated wastewater use for irrigation projects — Part 1: The basis of a reuse project for irrigation
ISO 200400 - Sustainable procurement — Guidance
ISO 21929- Sustainability in building construction — Sustainability indicators — Part 1: Framework for the development of indicators and a core set of indicators for buildings
ISO 14080- Greenhouse gas management and related activities — Framework and principles for methodologies on climate actions.
ISO 2631- Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements
ISO 50001- Energy management systems — Requirements with guidance for use
DIN 4150-3 (2016) Vibrations in Buildings, Part 3, Effects on Structures.
Dutch Ministry of Housing: 2000) - Ministry of Housing, Spatial Planning and Environment
Dutch Ministry of Housing: 2009 - Soil Remediation Circular
United States Environmental Protection Agency Ambient Air Quality Standards

European Union Standards (Directive 2010/75/EU)
European Union Air Quality Standards 2017

END OF PART

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