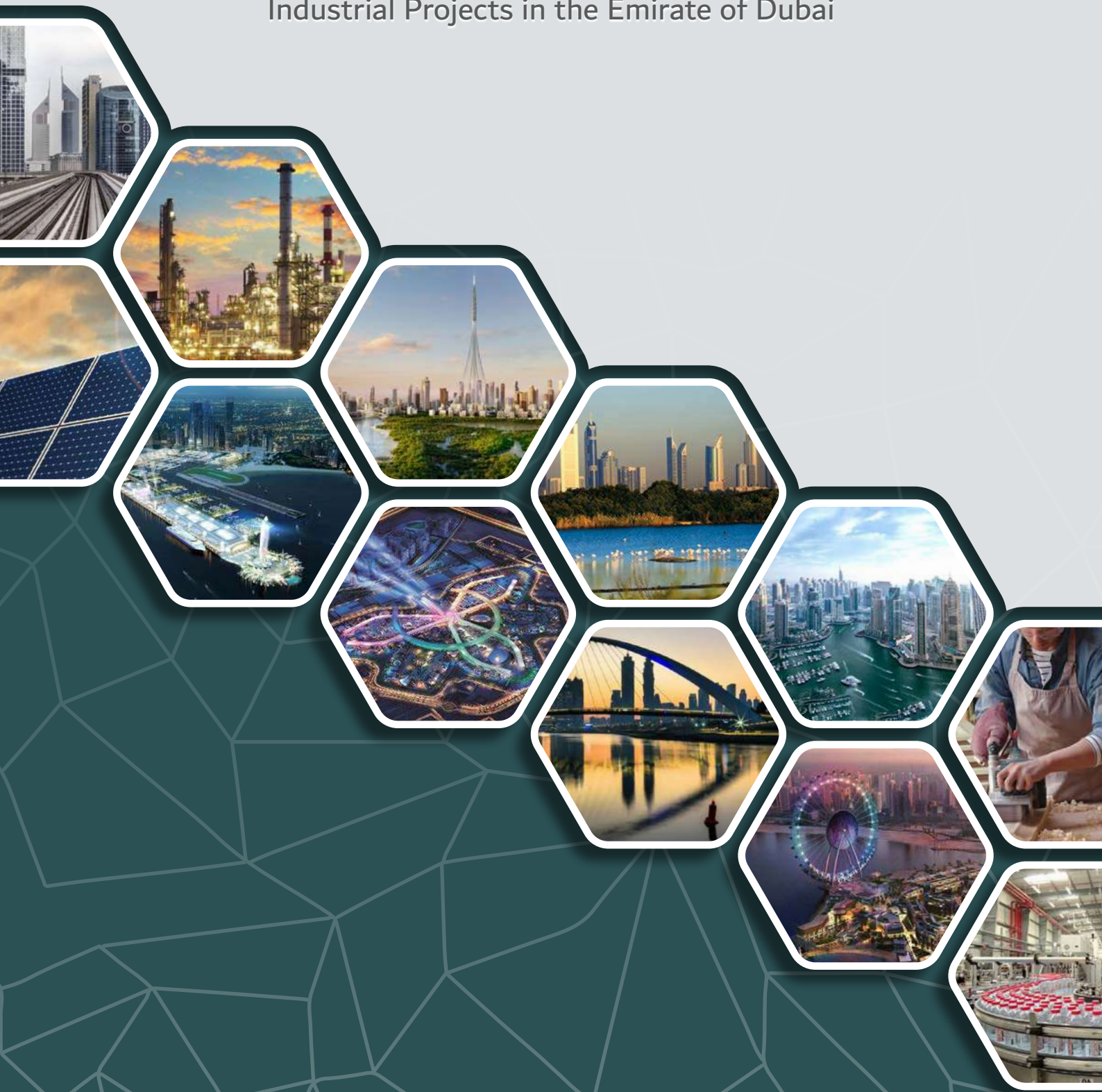


for Development, Infrastructure and
Industrial Projects in the Emirate of Dubai



Guidance on the Environmental Clearance (EC) Requirements

for Development, Infrastructure and
Industrial Projects in the Emirate of Dubai

All information and documents referred to in this Guidance are applicable at the date of issuance. It is the full responsibility of the user to refer to latest amendments, if any.

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Definition of Terms and Abbreviations

For the exclusive use of this Guidance, the following terms, phrases, abbreviations, and definitions shall apply.

Term	Definition / Explanation
Affection Plan	An official site plot plan issued by the concerned planning authority, indicating the allocated plot number, the owner of the plot, the plot's land-use, survey coordinates delineating the boundary, the total land area, and the community where it is located. Other details included, if any, are the "no-build" or "frozen areas" affected by nearby areas of conservation or heritage value, current or planned public utility and infrastructure corridor (i.e. owned by Dubai Electric and Water Authority [DEWA] or Roads and Transport Authority [RTA]), military ground, among others. This document is also sometimes termed as "Site Plan".
Applicant	Company Owner, appointed Environmental Consultant or company authorised by the owner of a development, infrastructure or industrial project to secure or request to renew or amend the Environmental Clearance (EC) through the Online EC Application System.
Aquifer	Geological formation with significant extents which can hold and transmit water to the groundwater wells.
Air Environment Sustainability and Environmental Assessment Section (AESEAS)	A Section within the Environmental Sustainability Department of Dubai Municipality (DM-ESD) responsible for the management and regulation of air environment (ambient air quality, odour, noise, EMF and climate change) to ensure its sustainability and maintain its purity, undertaking environmental studies and development of environmental strategies in line with Federal and Local Policies, environmental permitting for development, infrastructure, and industrial projects, and evaluation and qualification of Environmental Consultants in the Emirate of Dubai.
Beneficial impact	Positive effect on the environment.
Biodiversity	The variability among living organisms from all sources including, among others, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.
Climate Change	Climate change refers to a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.
Coastal Environment Sustainability Section (CESS)	A Section within the Environmental Sustainability Department of Dubai Municipality (DM-ESD), which oversees the sustainable development and the utilisation of Dubai coastal and marine environment. The Section is responsible for the monitoring of the Projects' compliance with the marine environment protection requirements and regulations imposed by the DM-ESD in accordance with the environmental legislations in the Emirate. The section contributes significantly to the decision-making, understanding, analysis, and study of coastal phenomena aimed at achieving a sustainable coastal development.
Company Owner	The owner of a company or industry/industrial project
Compensation	<p>An example of a trade-off whereby loss of natural values is remedied or offset by a corresponding compensatory action on the same site or elsewhere, determined through the process of Environmental Impact Assessment (EIA).</p> <p>Compensation involves implementing positive environmental measures to offset the residual adverse impacts which have been identified through the EIA process. Compensation measures have similar functions and produce outcomes which are of equal or greater environmental value to those which are expected to be lost.</p>

Term	Definition / Explanation
Competent Authority	Dubai Municipality – Environmental Sustainability Department (DM-ESD) is the Competent Authority in the Emirate of Dubai responsible for the implementation of the Federal Law No. (24) of 1999 for the Protection and Development of the Environment and its implementing rules and regulations.
Compliance Monitoring	Compliance Monitoring is conducted following the issuance of Environmental Clearance (EC) to ensure adherence with the conditions set in the EC and through the mitigation and monitoring requirements detailed in the Environmental Management Plan and the Environmental Monitoring Plan. It involves both Regulatory Monitoring and Self Monitoring.
Construction Environmental Control Plan (CECP)	Describes the construction works and prevention or mitigation measures in detail, and the environmental management and monitoring procedures to be implemented during the Project's construction phase. The CECP will ensure that appropriate environmental management practices are followed during the Project's construction phase. Based on the recommendations of the Environmental Impact Assessment, a CECP must be prepared and submitted with pertinent NOCs to the relevant Dubai Municipality Environmental Sustainability Department (DM-ESD) Sections.
Control Measure	Actions and/or activities that are taken to prevent, eliminate or reduce the identified hazard or impact to the environment.
Comments Resolution Sheet (CRS)	A CRS is a form prepared by an appointed Environmental Consultant specifying the responses to each of the comments or concerns received from Dubai Municipality Environmental Sustainability Department (DM-ESD) associated with the submitted Environmental Impact Assessment (EIA) document. Each comment or concern and the corresponding response shall be presented in a tabulated manner, clearly and accurately, providing all technical justification and references, to facilitate a speedy review process. This response shall also be incorporated and properly referenced in the revised EIA document.
Cumulative Environmental Effects / Cumulative Impact	The impact on the environment, which results from the incremental impact of an activity when added to other past, present, and reasonably foreseeable future activities. It can result from individually minor but collectively significant impact taking place over a period of time.
Cumulative Environmental Effects Assessment	Assessment of the effects of changes to the environment that are caused by an action in combination with other past, present, and future human actions.
Developer	A Company or Entity who develops land. The developer seeks a profit from development of the land, either by selling a development, such as residential complex, or an office building, or by holding the developed property to reap a return on the investment. In certain cases, Developer and Project Owner are one and the same (please refer to Project Owner definition).
Development	For the purpose of this Guidance, Development is any Project which involves conversion of a land for the construction of buildings and /or facilities for residential, commercial or industrial use, or for mixture of uses.
Direct Impact	Occurs through direct interaction of an activity with an environmental, social, or economic component.
Environment	The physical, cultural, social and economic attributes of the natural and built environs including land, water, atmosphere, climate, sound, odour, fauna, flora, and archaeological sites.

Term	Definition / Explanation
Environmental Aspect	An element, component, or resulting product of an activity or Project development that interacts with the environment.
Environmental Clearance (EC)	The environmental license, as per Federal Law No. (24) of 1999, which contains the set of environmental compliance conditions issued for the Project with known significant environmental impacts, and which satisfies the requirements of the Environmental Impact Assessment (EIA) process. It specifies the scope and conditions that must be implemented during the life cycle of a project.
Environmental Consultant	Professional and experienced environmental practitioner registered with the Dubai Municipality Environmental Sustainability Department (DM-ESD) to undertake Environmental Impact Assessment (EIA) studies and provide independent expert assessment and advisory services for their clients on matters pertaining to the management of environmental issues associated with the proposed Project. They assist in facilitating compliance of Project Owner to EIA process and environmental regulations, and in securing approval from the Competent Authority.
Environmental Control Section (ECS)	A Section within the Dubai Municipality Environmental Sustainability Department (DM-ESD) responsible for the monitoring of the Project's compliance with the environmental requirements and regulations imposed by the DM-ESD in accordance with Federal Law No. (24) of 1999, and its Implementing Rules and Regulations.
Environmental Impact / Effect	The resulting effect of an environmental aspect. Impact is used interchangeably and has the same meaning as "effect".
Environmental Impact Assessment (EIA)	A systematic planning process for identifying, predicting, analyzing and managing the potential environmental impacts (positive and negative) of a project on the environment and the potential effects of the environment on the project. The purpose of an EIA is to provide an independent assessment of a Project's potential environmental impacts to enable authorities and relevant stakeholders to understand and prevent or reduce the potential adverse impacts of the project before making decisions on whether Environmental Clearance (EC) for the Project will be granted. The EIA Study is a comprehensive and detailed study that is used as a tool to identify, assess and plan the pros and cons of direct, indirect, cumulative, potential mitigation and monitoring of environmental impacts associated with a proposed project or facility.
Environmental Impact Assessment Report (EIAR)	A document prepared by the Environmental Consultant that presents the detailed account of the quantitative EIA study process.
EIA Report for Major Industrial Activities	It is the prerequisite document prepared and submitted by the Company Owner or its appointed environmental consultant to obtain Environmental Clearance (EC) for the major industrial activities. It includes an outline of the environmental management and monitoring plans that the Company Owner will undertake to protect the environment.
Environmental Impact Assessment Summary (EIAS)	An EIA document similar to an EIA Report in brief, which is a qualitative EIA study.
EIA Summary Report for Medium Industrial Activities	It is a form for medium industrial activities that contains brief information about the industrial processes with clear details of impacts expected from each environmental aspect.

Term	Definition / Explanation
EIA Checklist for Light Industrial Activities	It is a simplified checklist version of an EIA Summary Report, prescribed by the Air Environment Sustainability and Environmental Assessment Section (AESEAS), to be accomplished by the Company Owner to identify the project's environmental aspects and environmental impacts.
Environmental Management Consultant	An Environmental Management Consultant, if deemed required especially for large, multi-faceted Projects, is an Environmental Consultant and shall be appointed by the Project Owner to manage the implementation of the EIA recommendations and the EC's conditions. The Environmental Consultant for the EIA could also be the Environmental Management Consultant, but not necessarily so.
Environmental Management Plan (EMP)	An Action Plan or Management Strategy for the implementation of mitigation measures identified in an EIA.
Environmental Performance Report (EPR)	A document presenting the progress of the Project's implementation as well as the effectiveness of its environmental monitoring and management program.
Establishment	Any licensed commercial or business activity, which may include any building, factory, equipment, shop or office and any area or land and structures pertaining thereto.
Ex-situ	Off-site
Federal Project / Activity	Any project or activity situated in a geographical location intersecting more than one Emirate.
Groundwater	Water occupying all voids within a geologic stratum.
Groundwater protected basins	Protected area demarcated by government for the protection and conservation of groundwater resources.
Hazardous Waste	Any waste that exhibits one or more hazardous characteristics, such as being corrosive, flammable, oxidizing, poisonous, radioactive or eco-toxic.
Hydrogeological environment	Refers to aspects of groundwater, soil, surface water and geological environments found in the Emirate of Dubai.
Indirect Impact	The effect on the environment, which is not a direct result of the Project, often produced away from or as a result of a complex pathway. Sometimes referred to as second or third level impacts, or secondary impacts.
Industry	An economic or business entity with activities concerning the processing of raw materials and/or manufacturing or production of a particular kind of goods or closely related raw materials for another process, and/or rendering of services. For the purpose of this Guidance, an industry is also referred as "industrial facility", "industrial project", "company", "factory", "warehouse" or "business".
Infiltration	The entry into soil or solid waste of water at the soil or solid waste surface.
Infrastructure	A facility or structure necessary for the efficient operation of a society. This includes, but not limited to, roads, bridges, railways, water and power supply, airports and seaports, drainage and sewerage networks.
In-situ	Onsite

Term	Definition / Explanation
International Environmental Agreement	Also referred to as a (international) protocol, covenant, convention amongst other terms, a type of treaty binding in international law with a primary stated purpose of controlling pollution and managing or preventing human impacts on natural resources.
Leachate	Any liquid that, in the course of passing through matter, extracts soluble or suspended materials which are harmful substances that may then enter the environment. This is most commonly used in the context of landfills or municipal solid waste disposal facilities.
Master Plan	A long-term planning document that provides a conceptual layout to guide future growth and development, presenting the overall land use of Development/Project through narrative and maps, and includes both present property uses as well as future land development plans. It is considered as a dynamic document that can be altered based on changing Project conditions over time and in line with the vision and policy directions of the government.
Mitigation Measures	Means to prevent, reduce or control the potential adverse environmental effects of a Project, and include restitution for any damage to the environment caused by those effects through replacement, restoration, compensation or any other means and optimizing the environmental benefits of a Project.
Natural Reserves Section (NRS)	A Section within the Dubai Municipality Environmental Sustainability Section (DM-ESD) responsible for the development and implementation of conservation strategies to maintain healthy ecosystems including the marine and terrestrial biodiversity, and to ensure the effective management of the protected areas in Dubai Emirates as per the best global standards.
Natural Resources Sustainability Section (NRSS)	A Section within the Dubai Municipality Environmental Sustainability Department (DM-ESD) responsible for the creation and implementation of policies, guidelines, rules and regulations governing any use of natural resources, in the form of exploration, development, extraction, and disposition; and the conservation and sustainable use of soil, surface and groundwater resources in the Emirate, in line with the DM strategies, and in accordance with international best practices.
Negative impact	Commonly termed as adverse impact, which means detrimental effect on the environment.
No Objection Certificate (NOC)	A Certificate issued by the Competent Authority stating their no objection on the implementation of a Project or a specific activity that is a part or a component of a larger Project, which has already satisfied the requirements of the Environmental Impact Assessment (EIA) process.
Project	Any activity, process, premises or development regardless of scale or magnitude, which has an impact, whether significant or not, on the environment.
Project Owner	The owner of a Project to be developed.
Regulatory Compliance Monitoring	Conducted by DM-ESD Officers and Engineers and involves, but not limited to, site inspection to check and verify the status of the Project and the mitigation measures as per the approved EIAR or EIAS, to record and assess the actual impacts of the Project, and to conduct desktop review of submitted documentation requirements as per the issued EC.
Residual Environmental Impact	Impacts remaining after the implementation of preventive and/or mitigating measures.

Term	Definition / Explanation
Screening	The process of deciding on whether an Environmental Impact Assessment (EIA) is required for a Project not categorised in this Guidance. The main conclusion will be a classification of the Project according to its likely environmental sensitivity. This will determine whether an EIA is needed, and if so, the type of EIA document.
Self Compliance Monitoring	Conducted by the Project Owner, Main Contractor or by Environmental Consultants, as applicable, and includes periodic site audits and inspections, as well as In-Situ or Ex-Situ sampling and testing.
Sensitive Receptor	Receptors are valued environmental features, such as groundwater, coastlines, air, biodiversity and human settlements (e.g. residential area, hospital, day care centre, etc.) that may be affected by one or more aspect of a proposed Project.
Separation Distance / Buffer Zone	<p>Separation Distance is the linear distance between the source of emission and sensitive receptors.</p> <p>Buffer zone is the area of land (as determined by the separation distance) designed to protect sensitive receptors from a potential impact. The features of the buffer zone are a function of the impact they are designed to mitigate, and may include vegetation, land or sea scape features, and buildings or structures.</p>
Significance	The extent to which something matters. Significance is the acceptability of the residual impacts of a Project on valued receptors. It may be determined by consideration of one or more of the following factors: 1. Magnitude, 2. Frequency, 3. Duration, 4. Geographic extent, 5. Seasonality, 6. Social/economic factors.
Stakeholder	Individuals, communities, government agencies, private organisations, non-governmental organisations or others who may directly or indirectly be affected by or may have interest on the Project or activity.
Sustainability / Sustainable Development	Development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.
Trade wastewater	Any wastewater generated and discharged from industrial operations or commercial activities.
Transboundary	Crossing a political border (national or international).
Transboundary Environmental Impact	A direct or cumulative environmental impact of the construction or operation of a project or of implementation of an activity that is extended or is likely to be extended outside the areas under the jurisdiction of the Competent Authority.
Waste	<ul style="list-style-type: none"> - Any discarded, rejected, abandoned, unwanted or excess matter, whether or not intended for sale or for recycling, reprocessing, recovery or purification by a separate operation from that which produced the matter; or - Anything declared by the DM Waste Operations Department (DM-WOD) to be waste, whether of value or not.
Wastewater	All spent water discharged from any activity of man or industrial process. For the purpose of this document it is further classified into two (2) types namely; a) domestic wastewater, and b) trade wastewater.

**Volume
1**

**EIA System
in the Emirate of Dubai**

Volume 1 EIA System in the Emirate of Dubai

Volume 1 describes the Environmental Impact Assessment (EIA) System being implemented by the Dubai Municipality Environmental Sustainability Department (DM-ESD) for development, infrastructure and industrial projects in the Emirate of Dubai, as mandated by the Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, and its Implementing Rules and Regulations, and in line with the comprehensive legal and regulatory framework within the United Arab Emirates (UAE).

1 Introduction

A visionary leadership, unprecedented mega development projects, high-quality infrastructure, knowledge-based, sustainable and innovation-focused businesses, an expatriate-friendly environment – these strategic foundations have set Dubai as a tourism hub and an iconic global metropolis within the region. The Dubai Government's decision to diversify from a trade-based and oil-reliant economy into a service- and tourism-oriented city has made real estate and other developments more valuable. Initiatives were also established to transform Dubai into a global platform for industries based on knowledge, innovation and sustainability, and the plan is to expand its industrial zones with advanced infrastructures and modern technologies aiming to attract international investors and driving all sectors to be competitive in the regional and international levels. Construction on a large scale has turned Dubai into one of the fastest-growing cities in the world, a city that boasts extensive range of industrial activities, unmatched towers, remarkable architecture and world-class developments.

To augment its success, Dubai is setting the fundamental groundwork for attracting new businesses and investors by establishing a suite of economic frameworks that remove barriers to development, encourage investment and promote ease in conducting business in the region. Embedded within these frameworks is the theme of environmental protection and sustainability.

As the Emirate aims to be a world leader and an example of environmental and sustainability excellence across the globe, it recognises the impacts on the environment brought about by this development and industrial revolution. The protection, conservation and enhancement of the environment are considered three of the main objectives of the Federal and the Dubai Government that have been integrated into developmental policies and strategies. A system of federal laws and executive regulations focused on the protection and enhancement of the environment are enforced by competent authorities. These aim to protect the air, water, and soil environment from pollution and waste; develop water resources; protect marine environment; conserve biodiversity; natural resources, and fisheries; and render mitigation strategies and adaptation measures on climate change in order to promote sustainable development in the country. To consider the protection of environment, appropriate design considerations and responsible project implementation are vital elements of an effective environmental protection program.

In support of the initiatives and pursuant to the Federal Law No. (24) of 1999 on the Protection and Development of the Environment (hereafter referred as the Law), the Dubai Municipality – Environmental Sustainability Department (DM-ESD), the Competent Authority in Dubai as per the Law, has embarked on this strategic initiative to develop a Guidance on the Environmental Clearance Requirements for Development, Infrastructure and Industrial Projects. This document (hereby referred to as the Guidance) is published under the authority of the DM-ESD to provide information and guidance to Project Owners, Company Owners and Environmental Consultants on the DM-ESD-prescribed procedures and requirements to obtain an Environmental Clearance (EC) for all development, infrastructure and industrial projects in the Emirate of Dubai. An EC will be issued for Projects that will successfully complete the Environmental Impact Assessment (EIA) process leading to an approved EIA document. Specifically, an EC will be issued when the DM-ESD is fully satisfied that the potential impacts of a project have been properly analysed and addressed through the provision of appropriate mitigation measures.

This Guidance shall in effect supersede the previous Environmental Planning and Studies Section (EPSS) Technical Guideline No. 01 regarding the “Environmental Impact Assessment (EIA)”, and Technical Guideline No. 02 on the “EIA Requirements for Land Development and Infrastructure Projects”, both issued in March 2019.

2

Purpose and Objectives

This Guidance is intended for the use of Project or Company Owners and Environmental Consultants who are planning to submit an application to secure an EC from DM-ESD. The Guidance describes the procedures and documentation required to properly carry out an environmental impact assessment (EIA) of a proposed development, infrastructure and industrial projects in the Emirate of Dubai. Strict adherence to the Guidance by Project or Company Owners and Environmental Consultants is a necessary component of the EC application process. For an EC to be issued to a Project, the EIA study shall satisfactorily identify and assess environmental impacts of the Project, recommend preventative and mitigation measures, and establish monitoring system to evaluate the effectiveness of measures.

This Guidance contains information that is proprietary to DM-ESD, which shall not be used in any misleading context or purposes other than compliance with EC requirements in the Emirate of Dubai.



3 Dubai Strategic Vision

All of the environmental performance and sustainability indicators linked to the Dubai Strategic Vision shall be considered as part of the DM-ESD EIA review. For convenience the main policy aspects in this regard are summarised below.



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DUBAI 2040 URBAN MASTER PLAN

The Dubai 2040 Urban Master Plan maps out a comprehensive plan for a sustainable urban development in Dubai. The people-centric Plan focuses on reinforcing Dubai's competitiveness as a global destination by providing a wide diversity of lifestyle and investment opportunities for citizens, residents and visitors over the next 20 years. It aims to provide the highest standards of urban infrastructure and facilities, and has a strategic structural layout, aligning all urban development master plans in the Emirate with the Dubai's strategic economic priorities and the needs of the future.

Dubai 2040 Urban Master Plan is the seventh development plan for the emirate since 1960. Between 1960 and 2020, the population of Dubai has significantly increased since then from 40,000 to 3.3 million while the urban and built area of the emirate increased by 170 times.

The key objectives of Dubai 2040 Urban Master Plan are to:

- ◆ upgrade Dubai's urban areas – Deira and Bur Dubai, Downtown and Business Bay, Dubai Marina and JBR, and two new centres, Expo 2020 Centre and Dubai Silicon Oasis Centre;
- ◆ improve the efficiency of resource utilization;
- ◆ develop vibrant, healthy and inclusive communities and double green and leisure areas to provide a healthy environment to residents and visitors;
- ◆ provide sustainable and flexible means of mobility;
- ◆ foster greater economic activity and attract foreign investments to new sectors;

- ◆ enhance environmental sustainability;
- ◆ safeguard the emirate's cultural and urban heritage and strengthen citizens' attachment to older neighbourhoods; and
- ◆ develop a comprehensive legislation and plan a governance model to support sustainable development and growth.

The Master Plan aims to encourage mass transit use, walking, cycling and the use of flexible means of transportation, besides developing a comprehensive planning database to support decision-making and enhance transparency. It also seeks to develop integrated sustainable housing complexes to meet the needs of citizens. Integrated communities will be developed according to the highest planning standards, with green spaces, commercial centres and recreational facilities aimed at enhancing human well-being. By 2040, Dubai will have achieved the following:

- ◆ green and recreational spaces will double in size;
- ◆ nature reserves and rural natural areas will constitute 60 per cent of the emirate's total area;
- ◆ several green corridors will be established to link the service areas, residential areas and workplaces;
- ◆ the movement of pedestrians, bicycles, and sustainable mobility means across the city will be facilitated;
- ◆ land area for hotels and tourist activities will increase by 134 per cent, and for commercial activities, it will increase to 168 square kilometres;
- ◆ land area for education and health facilities will increase by 25 per cent;
- ◆ the length of public beaches will increase by 400 per cent.

The Dubai Urban Master Plan 2040 integrates the Hatta Development Plan, which provides for the comprehensive development of the area.



UAE CENTENNIAL 2071

The UAE Centennial 2071 is a long-term, full-vision plan that extends for 5 decades after 2021. It forms a clear map for the long-term government work, to fortify the country's reputation and its soft power. The plan aims at investing in the future generations, by preparing them with the skills and knowledge needed to face rapid changes and to make the UAE the best country in the world by the next centennial in 2071.



Pillars of UAE Centennial 2071

- Future-focused government: The objectives of the government under the UAE Centennial 2071 include establishing the government of the UAE as the best government in the world, with a long-term vision and inspirational leadership that anticipates and prepares for the future. Other objectives include achieving happiness in society and spreading positive messages internally and to the world and developing mechanisms for monitoring long-term variables in various sectors.
- Excellent education: The UAE Centennial 2071 highlights the importance of excellent quality of education. Certain areas of focus in education include advanced science and technology, space science, engineering, innovation and health sciences. Other educational measures include teaching students, mechanisms for discovering their individual talents early. On the institutional level, educational institutions are encouraged to be incubators of entrepreneurship and innovation and to be international research centres.
- A diversified knowledge economy: The UAE's economy is aimed to be competitive and one of the best economies worldwide. This can be achieved by increasing productivity of national economy, support of national companies, investment in scientific research and promising sectors, focus on innovation, entrepreneurship and advanced industries, development of a national strategy to shape the future of the UAE's economy and industry, and place the UAE among international important economies. Knowledge economy can be achieved by a generation of UAE inventors and scientists and supporting them in technical sciences.
- A happy and cohesive society: Community development is an integral part of the UAE Centennial 2071. Some objectives in this regard include establishing a secure, tolerant, cohesive and ethical society that embraces happiness and a positive lifestyle and a high quality of life. The pillar also focuses on developing programmes to prepare future generations to serve as the UAE's goodwill ambassadors, as well as promoting women's participation in all sectors, making the UAE one of the best places to live in.

Its programme includes:

- ◆ fortifying the country's reputation
- ◆ diversifying the imports and the exports by relying less on oil
- ◆ investing in education focusing on advanced technology
- ◆ building Emirati values and ethics for the future generations
- ◆ raising productivity of the national economy
- ◆ enhancing society's cohesion

‘WE THE UAE 2031’ VISION

‘We the UAE 2031’ follows the ‘UAE Vision 2021’ which was created to accelerate UAE’s growth in various sectors, including healthcare, education, sustainability and infrastructure. The Vision represents a national development plan for the next 10 years focusing on social, economic, investment and development aspects. It seeks to enhance the position of the UAE as a global and influential economic hub with the aim to highlight the country as a flourishing economic model providing vast opportunities to all global partners.



Figure 1: ‘We The UAE 2031’ Vision

‘We the UAE 2031’ Vision is based on four pillars:

- ◆ Forward Society – achieving the prosperity of society by enhancing the capabilities of the citizens to maximise their effective contribution in all sectors
- ◆ Forward Economy – reflecting the UAE's belief in the importance of human capital as the main driver of the next 10-year development plan
- ◆ Forward Diplomacy – consolidating the pivotal role and influence of the UAE based on respect for human values
- ◆ Forward Ecosystem – enhancing the government performance and the UAE’s infrastructure and its development according to the latest technological methods, including the development of digital infrastructure.

‘We the UAE 2031’ Vision aims the following Key National Indicators:

- ◆ double the country’s gross domestic product (GDP) from AED 1.49 trillion to AED 3 trillion
- ◆ generate AED 800 billion in non-oil exports
- ◆ raise the contribution of the tourism sector to the GDP to AED 450 billion
- ◆ raise the value of the UAE’s foreign trade to AED 4 trillion
- ◆ rank the UAE as:
 - 1st globally in developing proactive legislations for new economic sectors
 - one of the top 10 countries globally in the ‘Human Development Index’
 - one of the top 10 countries globally in the quality of healthcare
- ◆ position the Emirati cities among the best 10 cities globally in the quality of life
- ◆ position the UAE globally
 - among the top 10 countries in attracting global talent
 - as first in the ‘safety’ index
 - as one of the top 10 countries in the ‘Global Food Security Index’
 - as one of the top three countries in the ‘Global Cybersecurity Index’.



The strategy prioritizes the development of six (6) industrial sub-sectors

DUBAI INDUSTRIAL STRATEGY 2030

The Dubai Industrial Strategy was initiated to support the Dubai Plan 2021, helping Dubai to build its diversified economic base – a crucial determinant of UAE’s global competitiveness in the coming period aiming to propel Dubai as a global platform for knowledge-based, innovation-focused and sustainable industrial activities.

The objective of the strategy is to make Dubai an international economic hub, linking specific sectors to stimulate innovation and creativity. The strategy is looking forward to enhance industrial coherence and integration with other economic sectors particularly strategic ones, and create an attractive investment environment through a set of initiatives and incentives. These will develop and improve existing targeted industries and attract new ones with competitive capabilities.

The strategy will have a significant impact on Dubai's economy towards 2030, leading to the following:

- ◆ 160 billion Dirhams forecasted increase in Dubai's total GDP;
- ◆ 18 billion Dirhams forecasted increase in GDP for the industrial sector (currently valued at approximately 41 billion Dirhams);
- ◆ Creation of more than 27,000 specialized jobs;
- ◆ Increase in research and development expenditures by approximately 700 million Dirhams; and
- ◆ 16 billion Dirhams forecasted increase in exports.

DUBAI MUNICIPALITY STRATEGIC PLAN 2022 – 2026

Dubai Municipality launched the update of its Strategic Plan 2022 to 2026 to continuously propel Dubai as a pivotal hub within the global economy. The Plan has the vision for Dubai to be “a pioneering municipality for a global city” and a mission to “plan, run and ensure the city's sustainability through providing pioneering municipal services to support people's happiness and achieving Dubai's vision” in line with the Corporate Values of “Competitiveness”, “Proactivity”, “Positivity”, and “Collaboration”.



Dubai Municipality Strategic Plan 2022 – 2026 consists of the following pillars:

ENABLERS	1. Digital and Competitive Organizational Systems 2. Sustainable Human, Financial and Knowledge Assets and Resources
PROCESS	3. Sustainable Urban Planning and Advanced Building Ecosystem 4. Integrated Sanitation and Waste Management 5. Sustainable Environment, Health and Food Ecosystem 6. Attractive City with Integrated Facilities
IMPACT	7. People Happiness

For the pillar “Sustainable Environment, Health and Food Ecosystem”, the following are the Strategic Objectives:

- ◆ Proactive protection of the environment and sustainability of natural resources
- ◆ Proactive protection of public health
- ◆ Proactive protection of the community from food-related risks
- ◆ Developing and implementing the best public and occupational health and safety standards
- ◆ Developing and implementing globally recognized standards for laboratory tests and calibration certificates
- ◆ Ensuring providence of flexible food supply chains



4

EIA Principles and Factors

The full application of the following EIA principles and factors will increase the likelihood of the Project to achieve satisfactory environmental outcomes. These key principles and factors are based on international best practices for environmental impact assessment:

- 1 Precautionary Principle:** This principle is used to invoke measures to prevent or reduce the threat of harm to the environment or human health in instances when scientific evidence about the threats posed by an activity or Project is not conclusive.
- 2 Mitigation Hierarchy:** An approach that aims to reduce risks to the environment, economy and society following a specific order or hierarchy of steps: 1. Avoidance; 2. Minimization; 3. Rehabilitation; 4. Restoration and; 5. Offset.
- 3 Maximum Resource Conservation:** Effective actions which lead to the optimal protection, preservation, management, or restoration of renewable and non-renewable natural resources such as wildlife, soil, energy and water.
- 4 Polluter Pays:** The party responsible for producing pollution is responsible for paying for the damages done to the natural environment or community.
- 5 Inclusiveness, Timeliness and Transparency:** The best decisions made are those in which the information and views of all interested and potentially affected parties are appropriately considered in a timely manner. Proper application of this three-(3)-pronged principle is the key as to whether an EC is issued or not.
- 6 Disclosure and All Encompassing:** The Project Owner has the primordial duty and responsibility for disclosing all relevant information of the Project to produce a meaningful and acceptable EIA study. The EIA must be performed for the entire proposed Project and not parts thereof.
- 7 Social Return on Investment (SROI):** Developed from traditional cost-benefit analysis and social accounting, it is a participative approach and an outcome-based measurement principle or tool used to understand and quantify the social, environmental and economic value of a proposed Project.
- 8 Comprehensive:** The EIA process should fully consider all relevant information on the affected environment, of proposed alternatives and their impacts, and the measures necessary to monitor and investigate residual impacts.
- 9 Credible:** The EIA process should be carried out with professionalism, rigor, fairness, objectivity, impartiality and balance, be evidence based, and subject to independent checks and verification.
- 10 Early Integration:** The integration of the EIA process early into the Project development cycle is a vital aspect of Project planning and design. The EIA process, which is primarily concerned with assessing the overall impacts of any proposed Project, development, or activity, is also used to ensure the earliest possible inclusion of environmental protection, mitigation, and enhancement measures into the Project design elements.

- 11 Zero Discharge:** The goal of this principle is minimal pollution from an activity or Project, including zero effluent discharge to the aquatic environment, recycling and reuse of all solid and liquid process wastes, and reducing air emissions to the lowest possible quantity and toxicity.
- 12 No net loss:** When every effort is made to avoid, minimise and restore, human activities can still have negative impacts on biodiversity. To avoid a net loss of biodiversity and ecosystem services, damages resulting from human activities must be balanced by equivalent gains.
- 13 Local, traditional and indigenous knowledge:** “Indigenous knowledge” is the term used to describe the knowledge systems developed by a community as opposed to the scientific knowledge that is generally referred to as “modern knowledge”. Local, traditional and indigenous knowledge is the basis for local-level decision-making in many rural communities. This knowledge should be used in the impact assessment to provide a complete and reliable overview of issues specific to a community. Views exchanged with stakeholders and experts are valuable elements of the EIA.



5

Objectives and Scope of an EIA

Adherence to, and the earliest application of, the EIA requirements and procedures contained herein is intended to:

- ◆ Enable Dubai to be a pioneering a global city and Emirate that provides the essence of success and sustainable living;
- ◆ Protect the Emirate of Dubai from significant adverse environmental impacts caused by the implementation of a Development or Infrastructure Project at the earliest possible stage of the Project cycle;
- ◆ Ensure that Projects are evaluated environmentally at the earliest feasible stage of the Project decision making cycle, with appropriate consideration of climate change, and on minimizing potential detrimental consequences of the Project on nature, society and built environments;
- ◆ Ensure that an environmental impact assessment is scientifically sound, evidence-based and completed in a timely manner;
- ◆ Facilitate cooperation, well-informed decision-making, and coordinated action between government entities pertaining to all phases of the environmental impact assessment process, as appropriate;
- ◆ Encourage government entities and Project or Company Owners within the Emirate of Dubai to take actions that promote sustainable development in order to achieve and maintain a healthy environment and healthy economy; and
- ◆ Encourage evaluation of the cumulative effects of Projects within the Emirate of Dubai and the consideration of the results of this evaluation in environmental assessments.

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The scope of an Environmental Impact Assessment (EIA) comprises:

- ◆ Description of the proposed Project and associated works together with the environmental requirements for carrying out the Project;
- ◆ Identification and description of the components of the environment that are likely to be affected by the proposed Project and to cause adverse impacts to the proposed Project;
- ◆ Identification and quantification of pollution sources and determination of the significance of impacts on sensitive receptors including cultural heritage sites;
- ◆ Identification and quantification of any potential losses or damage to flora, fauna and natural habitats;
- ◆ Identification of the negative impacts and recommendations on appropriate mitigation measures for all phases of the Project (e.g. initiation, pre-construction, construction, commissioning, operation, decommissioning, as applicable);
- ◆ Identification, prediction and evaluation of the residual (i.e. after practicable mitigation) environmental impacts and the cumulative impacts expected to arise during all project phases (e.g. construction, operation, decommissioning) as applicable, of the proposed Project in relation to the sensitive receptors;
- ◆ Investigation of the likelihood and extent of potentially undesirable “side effects” of proposed mitigation measures;
- ◆ Identification of constraints associated with the mitigation measures recommended in the EIA study;
- ◆ Identification and assessment of residual impacts after mitigation; and
- ◆ Plan and details of the environmental monitoring and audit requirements, as necessary, to ensure the implementation and the effectiveness of the adopted environmental protection and pollution control measures.

6

EIA Legal and Regulatory Framework

The UAE has a comprehensive legal and regulatory framework to ensure a sustainable environment within the Country consisting of federal laws, ministerial decrees, and executive by-laws.

The EIA system in the UAE is a legal requirement under Federal Law No. (24) of 1999. EIAs are implemented within the Emirate of Dubai under the jurisdiction of the DM-ESD. Relevant provisions of the following main laws and regulations shall be used as reference, as applicable, during the preparation of the EIA Study.

Table 1: Federal Laws & Regulations

Federal Laws & Regulations	Description
Federal Law No. (26) of 1981	Concerning the Commercial Maritime Law
Federal Law No. (9) of 1983	Regulating the Hunting of Birds and Animals
Federal Law No. (19) of 1993	Designation of Maritime Areas of the UAE
Federal Law No. (24) of 1999	Protection and Development of the Environment
Executive order of Federal Law No. (24) of 1999	Regulation for Handling Hazardous Materials, Hazardous Wastes and Medical Wastes
Federal Law No. (23) of 1999	Exploitation, Protection, and Development of Living Aquatic Resources
Cabinet Decree No. (37) of 2001	Amendment of Federal Law No. (24) of 1999
Federal Law No. (11) of 2002	Regulating and Controlling International Trade in Endangered Species of Wild Fauna and Flora
Federal Decree No. (13) of 2003	Agreement for Protection of Wildlife and its Natural Habitat in the GCC Countries
Cabinet Decree No. (12) of 2006	Regulation Concerning Protection of Air from Pollution
Federal Decree No. (11) of 2007	UAE Joining the Convention of Wetlands of International Importance (RAMSAR)
Federal Law No. (22) of 2016	Concerning Possession of Dangerous Animals
Federal Law No. (11) of 2017	Concerning the Heritage/Antiquities
Federal Law No. (12) of 2018	Integrated Waste Management
Cabinet Decree No. (27) of 2021	Regarding the amendment of some of the provisions of the Cabinet Decree No. (37) of 2001 concerning the systems for the implementing regulations of the Federal Law No. (24) of 1999 regarding Protection and Development of the Environment

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Table 2: Ministerial Decrees

Ministerial Decrees	Description
Ministerial Decision No. (33) of 2012	Regulating the Handling of HCFCs
Ministerial Decree No. (137) of 2012	Regarding Guidance to Regulate the Establishments Activities' Working in Cement Production Field
Ministerial Decree No. (118) of 2013	Regarding Requires Manufacturers and Suppliers of Plastic Products to Register Degradable Plastic Products
Ministerial Decision No. (152) of 2013	Concerning the Regulation of the Passage and Export of Hazardous Waste Shipments Across the Borders of the UAE
Ministerial Decree No. (359) of 2015	Regarding Technical Requirements for ambient Air Quality Monitoring Equipment and Location of Installation
Ministerial Decree No. (98) of 2019	Using Refuse Derived Fuel (RDF) produced from waste treatment procedures in cement plants

Table 3: Local Laws, Orders, & Decrees

Local Laws/ Decrees/Orders	Description
Local Order No. (61) of 1991	Environment Protection Regulations in the Emirate of Dubai, its Rules of Implementation
Decree No. (22) of 2001	Concerning the Conservation of the Coastal Zone in the Emirate of Dubai
Local Order No. (8) of 2002	Regarding the Sewerage, Irrigation and Water Drainage in the Emirate of Dubai
Local Law No. (11) of 2003	Establishment of Protected Areas in Dubai
Local Order No. (15) of 2008	Protection of Groundwater in the Emirate of Dubai
Decree No. (22) of 2014	Establishment of (6) Protected Areas in Dubai

Local Order No. (210) of 2016	Regarding the approval and registration of the temporary batching / mixing units
Executive Order No. (58) of 2017	Regarding the Approval Fees and Fines for Waste Disposal in the Emirate of Dubai

Moreover, as part of the UAE's commitment to protect the environment and to address the global environmental challenges and issues, the UAE has signed and ratified many international and regional environmental conventions and agreements as listed in the following tables.

Table 4: International Conventions & Agreements

Year	International Convention/Agreement
1954	Convention for the Prevention of Pollution of the Sea by Oil and its amendments
1969	International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties
1972	London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter
1972	Convention on the Protection of the World Cultural & Natural Heritage
1973	Convention on International Trade in Endangered Species of Wild Fauna and Flora – CITES
1973	International Convention for the Prevention of Pollution from Ships (1973) as amended by Protocol MARPOL (1978)
1976	Convention on Limitations of Liability for Maritime Claims
1979	Charter of the United Nations Industrial Development
1982	United Nations Convention on the Law of the Sea (UNCLOS)
1985	Vienna Convention for the Protection of the Ozone Layer
1987	Montreal Protocol on Ozone Depleting Substances of 1987 and Montreal Amendments (London 1990, Copenhagen 1982, Montreal 1987, Beijing 1999)
1989	Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal
1991	International Convention for the Protection of New Varieties of Plants (UPOV)
1992	Convention on Biological Diversity
1992	United Nations Framework Convention on Climate Change
1994	United Nations Convention to Combat Desertification
1997	Kyoto Protocol to the UN Convention on Climate Change
1998	Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
2001	Stockholm Convention on Persistent Organic Pollutants (POPS)
2007	Convention on Wetlands of International Importance (Ramsar)
2013	Minamata Convention on Mercury
2016	Paris Protocol to the UN Framework Convention on Climate Change
2016	Convention on the Conservation of Migratory Species (CMS) of Wild Animals

Table 5: Regional Conventions & Agreements

Year	Regional Convention/Agreement
1978	Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution, and its Protocol Concerning Regional Cooperation in Combating Pollution by Harmful Substances in Cases of Emergency
1990	Protocol for the Protection of the Marine Environment Against Pollution from Land-Based Sources
1991	Convention on Conservation of Wildlife and its Natural Habitats in the GCC Countries

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Roles and Responsibilities

The EIA process in the Emirate of Dubai entails the key stakeholders to carry out their roles and responsibilities as defined below. It is vital that all key stakeholders have a clear understanding of their specific responsibilities in the EIA process to facilitate efficient and effective Project planning and implementation.

7.1 Competent Authority

As mandated by Federal Law No. (24) of 1999 for the Protection and Development of the Environment, the Dubai Municipality Environmental Sustainability Department (DM-ESD) is the Competent Authority responsible for establishing and implementing the EIA guidelines and procedures, for taking decisions on the EC applications, and for monitoring environmental compliance of relevant development and infrastructure projects and industrial activities within the Emirate of Dubai. The main roles of DM-ESD in the context of the EIA process and post EC compliance monitoring include the following:

- Receive the EIA documents and EC-related application submitted by the appointed Environmental Consultant or Applicant, and evaluate for completeness;
- Technical review of EIA documents, organise EIA and/or EC-related clarification meetings with the Project/Company Owner, the appointed Environmental Consultant or Applicant, when necessary, and make the decision on the Application;
- Prepare and issue the EC for the Project, if granted, or reject the application online; and
- Enforce environmental compliance after the issuance of the EC (i.e. Regulatory Compliance Monitoring).

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7.2 Project Owner of Development and/or Infrastructure Projects

Project Owner of Development and/or Infrastructure Projects, has direct responsibility for the Project and shall provide necessary, complete and clear information on the Project at all stages of the EIA study process. The Project Owner appoints experts to undertake EIA studies on their behalf and respond to technical questions or clarifications on their submissions until the final approval of the EC application.

The Project Owner is specifically responsible to ensure the following actions are taken:

1. The Master Plan/design is frozen prior to the commissioning of an EIA study.
2. Appoint a DM-ESD-registered Environmental Consultant to carry out the EIA study for the entire components of the Project or Master Plan as opposed to separate studies on each Project component.
3. Provide the appointed Environmental Consultant with transparent and complete information on the proposed Project, and comprehensive Project schedule for the preparation of the EIAR or EIAS.
4. Understand the timing required for undertaking numerical modelling studies and other studies associated with EIA study.
5. Work with the appointed Environmental Management Consultant (if deemed required) to ensure that the recommendations of the EIAR or EIAS and their Environmental Management and Monitoring Plan (EMMP) and EC conditions are complied with, during the Project implementation.
6. All required environmental monitoring are performed in accordance with the Executive Order of the Federal Law No. (24) of 1999 on EIA study requirements.
7. Secure a copy of the EC, in a timely manner, once notification on the EC approval is received.
8. Ensure that any DM-ESD requested installation of permanent monitoring stations (to remain after Project construction, as applicable) is completed.
9. Keep and maintain records of monitoring results for five (5) years after the EC issuance date, and grant DM-ESD Officers and Engineers access to these records, when required.

10. Grant DM-ESD Officers and Engineers access to the site and records, and provide assistance during periodic or unscheduled inspections.
11. Ensure compliance, at all times, of the Project activities to the EC conditions.
12. Timely renewal of the EC, as necessary.
13. Proactively inform the DM-ESD in case of any changes (i.e. new, addition, amendment) in the activities or Project components.
14. Adequately communicate and share the requirements of the issued EC and Environmental Monitoring Plan as per the approved EIA document to the appointed Contractors.
15. Conduct, or appoint the Main Contractor or an Environmental Consultant to perform, periodic comprehensive environmental audits of the Project (i.e. Self Compliance Monitoring, refer to Volume 2 Section 4.2) during the construction phase to ascertain that compliance has been achieved as per the recommendations of the EIAR or EIAS and the conditions of the EC; and / or submit the Environmental Performance Report (EPR) in accordance with the requirements of the EC. The EPR should be comprehensive and accurate as per the minimum requirements stated in Volume 2 Section 4.3 of this Guidance.

7.3 Company Owner of Industrial Project, Facility or Activity

The Company Owner (individual, private company or government) of an industrial project, facility or activity, has direct responsibility to provide necessary, complete and clear information during the EIA study and EC application process. The Company Owner can appoint an environmental consultant to undertake EIA studies on their behalf and respond to technical questions or clarifications on their submissions until the final approval of the EC application. The Company Owner is specifically responsible to ensure the following actions are taken:

- Provide the appointed Environmental Consultant (if any) with transparent and complete information on the industrial facility for the preparation of the EIAR or required environmental documents.
- All required environmental monitoring are performed in accordance with the Executive Order of the Federal Law No. (24) of 1999 on EIA study requirements.
- Secure a copy of the EC, in a timely manner, once notification on the EC approval is received.
- Ensure that any DM-ESD requested installation of permanent monitoring stations is completed.
- Keep and maintain records of monitoring results for five (5) years after the EC issuance date, and grant DM-ESD Officers and Engineers access to these records, when required.
- Grant DM-ESD Officers and Engineers access to the site and records, and provide assistance during periodic or unscheduled inspections.
- Ensure compliance, at all times, of the industrial activities to the EC conditions.
- Timely renewal of the EC, as necessary.
- Proactively inform the DM-ESD in case of any changes (i.e. new, addition, amendment) in the industrial activities, location, or components.

7.4 Environmental Consultants

Environmental Consultants are entities of professionals and experts registered with DM-ESD to undertake EIA studies for Projects, and to manage the implementation of environmental protection requirements, as applicable. They assist the Project/Company Owner to obtain the EC by carrying out the EIA study, including the preparation of EIAR or EIAS, recommendation of mitigation measures, and developing environmental management and monitoring plans. As DM-ESD registered Environmental Consultants, they are obliged to adhere to the Code of Conduct governing the registration of Environmental Consultants in the Emirate of Dubai. The Guidance on the Registration of Environmental Consultants in the Emirate of Dubai is provided in Volume 4.

The Environmental Consultants, who are commissioned to undertake EIA studies for the purpose of obtaining

an EC for a Project, have the following roles and responsibilities:

1. Prepare the EIA study in accordance with the requirements of DM-ESD stated in this Guidance, the internationally recognised best practices, and the requirements of pertinent International Conventions on Environmental Protection.
2. Ensure that the information provided in the EIA document is accurate and consistent with the Project design to the best of their knowledge.
3. Undertake an EIA study for the entire components of the Project or Master Plan of a development or infrastructure project and not separate studies on each Project component to ensure the integrity of the EIA study itself and ultimately the protection of the natural and built environment from the entire proposed Project.
4. Use most up-to-date available data.
5. Ensure that all members of the EIA team and sub-contractors have acceptable technical capability and that sampling and analytical equipment are certified.
6. Submit EIA documents, and its revisions, in a timely manner.
7. Ensure that the laboratories involved in the baseline environmental surveys are accredited by the Emirates International Accreditation Centre (EIAC), for the specific tests.
8. Acknowledge their ethical role when carrying out an EIA study as per Federal Law No. (24) of 1999, and accordingly provide sound technical advice and solutions to the Project Owner throughout the course of the environmental study.
9. Conduct the required Self Compliance Monitoring and submission of EPR (refer to Volume 2 Sections 4.2 and 4.3, respectively) if appointed by the Project Owner of any development or infrastructure project.

7.5 Main Contractor for Development or Infrastructure Project

The Project Owner usually appoints an engineering consultant or contractor to design and build the Project. The appointed engineering consultant or contractor, or simply the Main Contractor, is responsible for complying with the EC conditions and for the implementation of the Environmental Management and Monitoring Plan (EMMP), both applicable for the construction phase. The Main Contractor is obliged to transfer responsibility to, and take responsibility for any sub-contractor that they employ during the construction of the Project.

The roles and responsibilities of the Main Contractor are the following:

1. Ensure that the Project is implemented as per the EIAR or EIAS information, recommendations and EMMP.
2. Ensure compliance with all of the applicable conditions of the issued EC related to construction, and address non-compliances, if any.
3. Prepare and submit obligatory Methods Statements for each construction phase to the Environmental Consultant during the EIA, if available.
4. Brief all sub-contractors on the requirements of the EIA and EC Conditions, including mitigation measures, provide sub-contractors with copies indicating their individual responsibilities, and ensure compliance through internal inspections and audits.
5. Accompany the authorised DM-ESD Officers and Engineers during Regulatory Compliance Monitoring.
6. Inform the DM-ESD, through all known means of communication, any environmental incidents at the Project site that results to environmental impacts regardless of the degree or severity. The Main Contractor shall be held accountable in case of occurrence of environmental violation and non-compliance. In this case, the DM-ESD has the right to issue penalty in addition to compensation for the environmental damage associated with the violation or non-compliance.
7. Receive Notice of Violation (NOV) on behalf of the Project Owner in case an environmental violation

is observed on site.

8. Take actions to rectify the environmental incidents, violations or non-compliance in coordination with the Environmental Consultant, if any, and as applicable.
9. Conduct the required Self Compliance Monitoring and submission of EPR (refer to Volume 2 Sections 4.2 and 4.3, respectively) if appointed by the Project Owner of any development or infrastructure project.

7.6 Environmental Management Consultant for Development or Infrastructure Project

An Environmental Management Consultant may be appointed, if deemed necessary, for a large, multi-faceted Project. Environmental Consultants can play the role as Environmental Management Consultant to manage the implementation of the EIA study recommendations and EC conditions during the construction phase of a Project.

The appointed Environmental Management Consultant shall be fully cognizant of the environmental regulations pertaining to the entire Project and shall be responsible to:

1. Act as a principal point of contact between DM-ESD and the Main Contractor or Project Owner on environmental issues at the Project site.
2. Accompany the authorised DM-ESD Officers and Engineers during Regulatory Compliance Monitoring.
3. Review method statements for environmental aspects and advise on improvements prior to starting the work.
4. Ensure that the recommendations of the EIAR or EIAS, EMMP, and the EC conditions are implemented by the Project Owner and Main Contractor.
5. Conduct periodic comprehensive environmental audits of the Project (i.e. Self Compliance Monitoring, refer to Volume 2 Section 4.2) during the construction phase to ascertain that compliance has been achieved as per the recommendations of the EIAR or EIAS and the conditions of the EC. The frequency of environmental monitoring is governed by the nature of the Project and monitoring may be required on a monthly or quarterly basis. DM-ESD has the right to determine the frequency and duration of monitoring, as deemed necessary.



6. Inspect the construction works for compliance with the agreed method statement, pollution prevention measures and permit conditions, and providing advice to the Main Contractor (still as part of Self Compliance Monitoring).
7. Bear equal responsibility with the Main Contractor for the implementation of the EIA study recommendations and conditions of the EC, and for the consequences in the event of non-compliance.
8. Submit the Environmental Performance Report (EPR) in accordance with the requirements of the EC. The EPR should be comprehensive and accurate as per the minimum requirements stated in Volume 2 Section 4.3 of this Guidance.
9. Inform the Main Contractor to address the non-compliance issue(s), in case of environmental violations and non-compliance during the construction of the Project with respect to the EIA study, the issued EC, and the relevant environmental laws and regulations, or any practice that cause a negative environmental impact, and follow up with them until the issues are rectified.
10. Inform the DM-ESD immediately, through all known means of communication, in the following cases:
 - a. Non-Compliance with the agreed method statements, recommendations of the EIA study and EMMP, and the EC conditions;
 - b. No actions taken to rectify identified environmental issues;
 - c. Violations causing significant environmental impacts;
 - d. Occurrence of environmental damage due to an incident or emergency situation (i.e. indicating the date of occurrence, action taken, current status, etc.).
11. Attend site progress meetings as necessary, and where required, meetings with the concerned stakeholders for any environmental concerns.
12. Receive Notice of Violation (NOV) on behalf of the Project Owner or Main Contractor in case an environmental violation is observed on site.



**Volume
2**

**Guidance for Development and
Infrastructure Projects**

Volume 2

Guidance for Development and Infrastructure Projects

Volume 2 is intended for the use of Project Owners and Environmental Consultants that are planning to submit an application to secure an Environmental Clearance (EC) from Dubai Municipality-Environmental Sustainability Department (DM-ESD) for any development or infrastructure project in the Emirate of Dubai. This Volume describes the procedures and documentation required to properly carryout an Environmental Impact Assessment (EIA) for a proposed development and/or infrastructure project or facility. Strict adherence to the Guidance by the Project Owner and/or the appointed Environmental Consultant is a necessary component of the EIA study and the EC application process

1 Categorisation of Development and Infrastructure Projects

This Chapter provides a list of Projects that are subject to an EIA, as required by the Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, and the Cabinet Decree No. (27) of 2021 of the Council of Ministers, prior to the commencement of any construction activity, any changes or modification in its process or component, or any planned expansion of an existing Project. The Projects that are covered by this Guidance are categorised based on location, size and sensitivity, the nature and magnitude of the potential environmental impacts, and consequently the type of EIA study required.

This Guidance identifies two types of EIA studies as follows:

- **EIAR:** quantitative EIA leading to the preparation of an EIA Report (EIAR); and
- **EIAS:** qualitative EIA leading to the preparation of an EIA Summary (EIAS).

The types of Projects and the corresponding type of EIA document required are presented in the following Section 1.1.

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1.1 List of Projects Required to be Subjected to an EIA (Mandatory List)

Projects/Activities as per Cabinet Decree No. 27 of 2021	Project Type	Threshold / Criteria	Required EIA Document ²	Required Environmental Codes ^{3,4}
Projects of Natural Resources of Fossil Origin				
Exploration and extraction projects, manufacturing and re-manufacturing, storage, and transport and selling of oil and gas, and all its derivatives (like benzene, diesel, oils & grease, as example but not as a limitation) including the related equipment and facilities ¹⁹	Fossil fuel, natural gas, and mineral ore exploration and development including offshore structures or pipelines	All	EIAR	EAS, A, C1, D, E1, E2 ⁸ , F ⁷ , G ^{7,8} , H ⁸
	Bulk storage facilities for petroleum, natural gas or petrochemical products	Bulk tank farm or tank terminal	EIAS	EAS, A, C1, C2, E1, E2 ⁶ , F ⁷ , G ^{6,7}
	Fuel filling stations	All	EIAS	F ⁷
Projects of Natural Resources of Non- Fossil Origin				
Projects of excavation and exploration of the minerals ¹⁹	Mining or quarrying of minerals	All	EIAR	EAS, A, B1, C1, D, E1, F ⁷
Projects of Energy and Water				
Projects of electricity generation plants (regardless of the power source) ¹⁵	Power generation plants (fossil fuel)	All	EIAR	EAS, A, B1, C1, C2, E1, E2 ⁵ , F ⁷ , G ^{6,7}
	Renewable energy plants (i.e. hydro, geothermal, solar power plants, Waste to Energy)	All	EIAR	EAS, A, B1, C1, D, E1, E2 ⁶ , F ⁷ , G ^{6,7}
	Open substations	All	EIAS	EAS, A, C1, C2, E1, F ⁷
Desalination plant ¹⁹	Sea water reverse osmosis (SWRO) plant	All (with intake and/or outfall to the sea or waterways)	EIAR	EAS, A, E1, E2, F ⁷ , G ⁷ , H, I1, I2, I3 ⁹ , I4 ⁹
	Reverse osmosis (RO) plant	With abstraction of saline groundwater or coastal aquifer, and/or discharge to soil and/or pumping into the aquifer	EIAR	EAS, A, C1, D, E1, F ⁷
	Other desalination methods other than reverse osmosis	All	EIAR	EAS, A, C2, E1, E2 ⁶ , F ⁷ , G ^{6,7} , H ¹⁰
Projects for the use of underground water resources including exploration, extraction, transportation, manufacture, storage and injection, and the related facilities and equipment used ¹⁹	Groundwater extraction, purification and recharge	All	EIAR	EAS, A, D, E1 ¹²
Water dams ¹⁹	Dams	All	EIAR	EAS, A, C1, D, E1, F ⁷ , G ⁷
	Water reservoir	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1 ¹² , D, E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Projects of Road Transportation and Aviation				
Tunnels and airports and their facilities regardless of their size or type	Tunnels, tunneling and related works	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D, E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
	Airport and airfields	All	EIAR	EAS, A, B2, D, E1, F ⁷

Projects/Activities as per Cabinet Decree No. 27 of 2021	Project Type	Threshold / Criteria	Required EIA Document ²	Required Environmental Codes ^{3,4}
Highways including bridges and roadways and related works	Highways including bridges and roadways that are located in the protected or environmentally sensitive areas	All	EIAR	EAS, A, B2 ⁵ , C1, D, E1, E2 ⁶ , F ⁷ , G ^{6,7} , H ¹⁵
	Highways including bridges and roadways that are not located in the protected or environmentally sensitive areas	New	EIAR	EAS, A, B2 ⁵ , C1, D, E1, F ⁷
	Excavation pits for borrow materials needed for roads	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D, E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
	Maintenance of roads and bridges	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D, E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Railway projects	Railways, trains and metro	All	EIAR	EAS, A, B2 ⁵ , C1, D, E1, F ⁷
	Trams	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D ¹² , E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Marine Projects and Marine Transportation				
Ports, opening and deepening the marine channels, bridges and marine tunnels, marine projects or that require marine drilling or reclamation	Development of a new harbour(s) or terminal(s) or marina or modification of an existing harbour or marina in coastal zone (including rock works, capital dredging or excavation, quay walls, reclamation)	All	EIAR	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2, I3, I4, I5 ¹¹
	Development of artificial canals connected to the Creek or sea or existing waterways (including excavation or dredging, retaining walls)	All	EIAR	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2, I3, I4
	Bridges above marine water (including Piers located in Creek or waterways or sea)	All	EIAR	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2 ¹² , I3 ¹² , I4 ¹²
	Maintenance dredging (including approach channels, turning basins)	All	EIAS	EAS, A, C2, E2, G ⁷ , H, I1 ¹³ , I2 ¹³
Marinas	Development of promenade or new marina or modification of existing marina in Creek or waterways (including floating pontoons with mooring systems, piles supporting platforms, quay walls, revetment)	With reclamation or encroachment into the sea or waterways	EIAR	EAS, A, C2, E1, E2, G ⁷ , H, I1, I3, I4
		Without any reclamation or encroachment into the sea or waterways	EIAS	EAS, A, C1, C2, E2, H
	Modification of existing marina in the coastal zone (including replacement or repairs to existing floating pontoons and mooring system)	More than 10 no. of berths or slips	EIAS	EAS, A, C2, E2, G ⁷ , H
Establishing any kind of activities and facilities on the islands and the coasts including the filling of the coasts and the edges of the islands	Effluent-discharging outfalls (thermal discharge, brine, hypersaline water, recycled water, storm water or groundwater, etc.)	Storm water or groundwater with discharge rates greater than 2.0-m3/sec	EIAR	EAS, A, D, E2, G ⁷ , H, I1, I2
		For all other effluents threshold is NOT applied	EIAR	EAS, A, C1, C2, E2, G ⁷ , H, I1, I2, I3 ⁹ , I4 ⁹
		Storm water or groundwater with discharge rates less than 2.0-m3/sec	EIAS	EAS, A, E2, G ⁷ , H
Establishing any kind of activities and facilities on the islands and the coasts including the filling of the coasts and the edges of the islands	Coastal stabilization (including revetment, groynes, breakwaters, seawalls, artificial reefs, beach reclamation, dredging, etc.)	All	EIAR	EAS, A, E2, G ⁷ , H, I1, I3, I4
	Maintenance of existing beaches (cleaning, re-profiling, trimming, beach nourishment)	All works extending below the intertidal zone	EIAS	EAS, A, E2, G ⁷ , H
	Development of an artificial island(s) or peninsulas (land reclamation, beaches, rock works, and quay walls)	All	EIAR	EAS, A, E2, G ⁷ , H, I1, I2, I3, I4
	Sub-marine pipelines	All	EIAR	EAS, A, E2, G ⁷ , H, I1 ¹⁴ , I2 ¹⁴ , I3 ¹⁴
	Sub-marine cables	All	EIAS	EAS, A, E2, G ⁷ , H
	Offshore capital dredging and/or disposal (sand dredging from borrow areas, disposal of dredged material)	All	EIAR	EAS, A, E2, G ⁷ , H, I1, I4
	Temporary or permanent causeway(s) (including rock works, reclamation)	All	EIAR	EAS, A, E2, G ⁷ , H, I1, I2, I4
	Temporary or permanent causeway(s) supported on piles	All	EIAS	EAS, A, E2, G ⁷ , H, I1
Infrastructure Projects				
Sewage / rainwater lines ¹⁷	Sewer lines	With sewage pumping stations	EIAR	EAS, A, B1 ⁵ , D, E1, F ⁷
	Drainage or storm water/rainwater lines	With discharge to the sea or waterways	EIAR / EIAS	Refer to "Effluent-discharging outfalls" – storm water criteria / threshold and Environmental Code requirements
Drinking water ¹⁹ / cooling lines ¹⁷	Drinking water lines	Located inside or near (within 1 km) a protected or environmentally sensitive areas ¹⁸	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1 ¹² , D, E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
	Cooling lines	Located inside or near (within 1 km) a protected or environmentally sensitive areas ¹⁸	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1 ¹² , D, E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Gas / Oil lines ^{17, 19}	Onshore pipelines for the transport of oil, natural gas or petrochemical products	In new oilfield or pipeline corridor	EIAR	EAS, A, E1, C1, D, F ⁷
		In existing oilfield or pipeline corridor	EIAS	EAS, A, C2 ¹² , E1, F ⁷

Projects/Activities as per Cabinet Decree No. 27 of 2021	Project Type	Threshold / Criteria	Required EIA Document ²	Required Environmental Codes ^{3,4}
Irrigation networks ¹⁷	Irrigation networks	With discharge to the sea or waterways	EIAR	EAS, A, D, E1, E2, G ⁷ , H, I1, I2
		Located inside or near (within 1 km) a protected or environmentally sensitive areas ¹⁸	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1 ¹² , D, E1, E2 ⁸ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Ground cables ¹⁹	Ground cables	Located inside or near (within 1 km) a protected or environmentally sensitive areas ¹⁸	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1 ¹² , D, E1, E2 ⁸ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Overhead power transmission lines ¹⁹	High voltage overhead power transmission lines	Located outside (beyond 1 km) the protected or environmentally sensitive areas	EIAS	EAS, A, C1, E1, F ⁷
		Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D, E1, E2 ⁸ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Any service lines on the right of the way ¹⁹	Utilities or service lines within the right of the way	Located inside or near (within 1 km) a protected or environmentally sensitive areas ¹⁸	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1 ¹² , C2 ¹² , D ¹² , E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H1 ^{5,6} , I1 ¹⁶ , I2 ¹⁶
Sewage treatment plants	Main sewage treatment plants	With design capacity of 70,000 m ³ /day and above	EIAR	EAS, A, B1, D, E1 ¹² , F ⁷
Sewage treatment plants in case of discharge treated water to the sea	Sewage treatment plants in case of discharge treated water to the sea	All	EIAR	EAS, A, B1, E1 ¹² , E2, D, F ⁷ , G ⁷ , H, I1, I2
Cooling plants	Cooling plants	With intake or outfall pipelines in the sea or waterways	EIAR	EAS, A, D, E1, E2, F ⁷ , G ⁷ , H, I1, I2, I3, I4
		With RO that discharges to the ground/soil or into the groundwater/aquifer	EIAR	EAS, A, D, E1 ¹² , F ⁷
Wastewater pumping stations	Wastewater pumping stations	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D, E1, E2 ⁸ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Projects Related to Wastes				
Projects of waste disposal (Regardless of the method used, dumping or incineration or others), whether the waste is solid or semi- solid or gases, hazardous or non- hazardous, municipal or industrial or medical including sites, facilities, equipment and transportation related to them	Landfills and waste disposal site	All	EIAR	EAS, A, B1 ⁵ , C1, D, E1, F ⁷
	Waste incineration plant	All	EIAR	EAS, A, B1, C1, D, E1, F ⁷
	Hazardous waste treatment facility	All	EIAR	EAS, A, B1, C1, D, E1, F ⁷
Projects of waste handling (Regardless of the method used, dumping or incineration or others), whether the waste is solid or semi- solid or gases, hazardous or non- hazardous, municipal or industrial or medical including sites, facilities, equipment and transportation related to them	Waste transfer station	All	EIAR	EAS, A, B1 ⁵ , C1, C2, E1, F ⁷
Non-hazardous waste collection and converting facilities	Waste sorting and recovery	All	EIAR	EAS, A, B1 ⁵ , C1, C2, E1, F ⁷
	Waste composting plant	All	EIAR	EAS, A, B1 ⁵ , C1, D, E1, F ⁷
Development Projects Related to Residential and Industrial Areas				
New beach residential projects	New residential, commercial or mixed-use community development on the coast	With closed man-made lagoons	EIAS	EAS, A, C2, E1, F ⁷
		Without permanent discharge to the sea or waterways		
		Without coastal component (e.g. beach is developed by others)	EIAR	EAS, A, C1, C2, E1, E2 ^{6,15} , F ⁷ , G ^{6,7,15} , H ¹⁵
		Adjacent or within 100-m from a beach	EIAR	EAS, A, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2, I4
New horizontal residential projects not on the coast	New horizontal residential, commercial or mixed-use community development not on the coast	With permanent discharge to the sea or waterways	EIAS	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2
		Building(s) regardless of height with a marina component		
		With closed man-made lagoons	EIAR	EAS, A, C1, C2, E1, F ⁷
		Without water intake or permanent outfall to the sea or waterways	EIAR	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2
New vertical residential projects not on the coast	New vertical residential, commercial or mixed-use community development not on the coast	With permanent discharge to the sea or waterways	EIAR	EAS, A, C1, C2, E1, E2 ¹⁵ , F ⁷ , G ^{7,15}
		Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, C1, C2, E1, F ⁷
		With closed man-made lagoons	EIAS	EAS, A, C1, C2, E1, F ⁷
		Without water intake or permanent discharge to the sea or waterways		
		Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, C1, C2, E1, E2 ¹⁵ , F ⁷ , G ^{7,15}
		With permanent discharge to the sea or waterways	EIAR	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2

Projects/Activities as per Cabinet Decree No. 27 of 2021	Project Type	Threshold / Criteria	Required EIA Document ²	Required Environmental Codes ^{3,4}
Shopping centers / permanent camps	Shopping centers / permanent camps	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, E1, F ⁷
Tourist villages / Parks	Tourist villages / Parks	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D ¹² , E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Projects of industrial area construction	Industrial estates, park, city or complex	With closed man-made lagoons	EIAS	EAS, A, C1, C2, E1, F ⁷
		Without water intake or permanent outfall to the sea or waterways	EIAS	EAS, A, C1, C2, E1, F ⁷
		Adjacent or within 100-m from a mean sea level shoreline	EIAR	EAS, A, C1, C2, E1, E2 ^{6,15} , F ⁷ , G ^{6,7,15} , H ¹⁵
		With water intake or permanent outfall to the sea or waterways	EIAR	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2
		With marina component		
Projects of Special Nature				
Projects that are located near (1 km) or within sanctuaries or environmentally or ecologically sensitive areas	Any Project ¹⁸	Any Project ¹⁸	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D ¹² , E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Projects that expected to affect heritage, history, entertainment, scientific, cultural and service nature located around them	Golf course	New and without water discharges to the sea or waterways, or with closed man-made lagoons	EIAS	EAS, A, C2, E1, F ⁷
		New and with water discharges to the sea or waterways	EIAR	EAS, A, C2, E1, E2, F ⁷ , G ⁷ , H, I1, I2
	Project that is expected to alter the cultural and scientific nature of the surrounding areas	All	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, D, E1, E2 ⁶ , F ⁷ , G ^{6,7} , H ¹⁶ , I1 ¹⁶ , I2 ¹⁶
	Project that is expected to alter the entertainment, recreational and service nature of the surrounding areas	Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, C2 ¹² , D, E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
Hotels/ hospitals and health facilities including the laboratories	Hotels	With marina component	EIAR	EAS, A, C1, C2, E1, E2, F ⁷ , G ⁷ , H, I1
		Located inside or near (within 1 km) a protected or environmentally sensitive areas	EIAR	EAS, A, B1 ⁵ , B2 ⁵ , C1, C2, D ¹² , E1, E2 ⁶ , F ⁷ , G ^{6,7,15} , H ^{15,16} , I1 ¹⁶ , I2 ¹⁶
	Hospitals, veterinary, specialized mediclinics, health facilities with incinerator	All	EIAR	EAS, A, B1, C1, C2, E1, F ⁷
Incinerators/ medical incinerators	Medical Incinerators	All	EIAR	EAS, A, B1, C1, C2, E1, F ⁷

Notes:

- With reference to the Online EC Application through the DM website (www.dm.gov.ae), this Table shall serve as a guide to enable the EC Applicant and/or the Project Owner to identify the correct Project Type and the required EIA document for the Project.
- If the project requiring EC involves elements that fall within more than one project type and identifies both EIAR and EIAS, EIAR shall be the required type of EIA document.
- This Table shall serve as a guide to enable the Project Owners to select the appropriate Environmental Consultant for each Project Type based on the Environmental Consultant's registration with DM Environmental Sustainability Department (DM-ESD).
- A registered Environmental Consultant (List is available in the DM website or may be requested through EIA@dm.gov.ae) shall not undertake any Environmental Code which the company does not have a registered specialist. DM-ESD will not accept or review any environmental report or any section of an Environmental Impact Assessment (EIA) document prepared by Environmental Consultant who is not registered with DM-ESD. DM-ESD shall not be held responsible for any application rejection resulting from the selection of Environmental Consultant not registered for the required Environmental Codes.
- If modeling is required as per Table 1: Minimum Baseline Air and Noise Survey, and Modelling Requirements for EIAR of the Guidance on the Requirements for Air, Noise, Odour Baseline Survey & Modelling, and Separation Distance.
- Required if the Project could potentially affect the marine ecology/environment
- May be required if a specific project will have impacts that would require translocation, capture, rescue, release and/or restoration of wildlife that will be displaced, and/or its behavior potentially affected by the changes in its habitat in or near protected and/or ecologically sensitive areas
- Required if with offshore structures or pipelines
- Required if the Project is an open channel type
- Required for desalination methods other than reverse osmosis, at coastal areas or waterways
- Required for terminals with refueling facility
- Maybe required depending on the nature and location of the project
- Required for environmental dredging/remediation projects
- Required ONLY if dredging and scour protection works are included in the scope of marine works
- Required for projects at the water-land interface
- Required for any project with the potential to impact coastal/waterway hydrodynamic and water/sediment quality
- In the case of pipelines under marine waters, please refer to the "Sub-marine pipelines" criteria/threshold and Environmental Code requirements
- With significant environmental impacts on the protected or environmentally sensitive areas
- Approval/NOC shall be obtained from the Dubai Supreme Council of Energy (DSCE) prior to applying through the online system to secure Environmental Clearance.

1.2 Exempted Types of Projects (Exclusion List)

All Projects not categorised in Section 1.1 are exempted to secure EC. These include, but not limited to, the following:

Category	Projects/Activities	Remarks
Projects of Energy and Water	Enclosed Substation	-
	Loop-In–Loop-Out (LILO) OHL	-
	Solar panel installation (e.g. rooftop solar)	For solar power plants, please refer to Section 1.1.
Projects of Road Transportation and Aviation	Improvement of existing road (widening, removal or addition of lanes, interchange, pedestrian crossing, etc.)	If works are located near (1 km) or within sanctuaries or environmentally or ecologically sensitive areas, please refer to Section 1.1.
	Access road to a development	-
	Helipad	-
	Vehicle parking or resting area or terminal	-
Marine Projects and Marine Transportation	Modification of existing marina in the coastal zone (replacement or repairs to existing floating pontoons and mooring systems) up to 10 no. of berths or slips	Without any rock works, dredging / reclamation
	Maintenance of existing beaches (cleaning, re-profiling, trimming, beach nourishment)	On dry areas and within the intertidal zone
	Development of promenade, new marina or modifications of existing marina in Creek or waterways (floating pontoons with mooring systems, piles supporting platforms)	- Without edge protection structures (e.g. revetment, quay walls) - No dredging or temporary reclamation
	Emergency coastal stabilisation (using revetments, geo-containers, etc.)	-
	Floating leisure and entertainment structures (water parks and restaurants)	-
Projects Related to Wastes	Grey water treatment facility	-
Development Projects Related to Residential and Industrial Areas	Labour accommodation	-
Projects of Special Nature	Private zoos and similar facilities	-

Screening is intended only for Projects that do not fall under any of the classifications in Sections 1.1 and 1.2. If a Project Owner or its appointed Environmental Consultant still has a doubt whether the proposed Project requires an EIA or not, a screening shall be conducted whereby DM-ESD will provide clarification. The outcome of the screening process will be a categorisation of the Project according to its likely environmental sensitivity. A decision will be made whether an EIA is needed, and the level of assessment required.

1.3 Projects Required to be Approved by the Ministry of Climate Change and Environment

1.3.1 Federal Projects

For the purposes of this Guidance, a Federal Project is defined as any project or activity essential to the functioning and servicing of UAE's society and economy that is situated in a geographical location intersecting Dubai and other Emirate/s. This may include, but not limited to, national infrastructures, regional or federal mass transits, and national facilities and structures for power generation.

For Federal Projects, the EIA document has to be submitted to and approved by the UAE Ministry of Climate Change and Environment (MoCCaE).

1.3.2 Projects With Transboundary Environmental Impacts

There are projects with potential significant environmental impacts that may cross Emirate borders or may have an extended impact to more than an Emirate through pathways, like water or air. A transboundary environmental impact may originate from the location where a project or activity is being implemented but is able to cause threat or damage not only within the locality but may extend to another Emirate's environment.

For the purposes of this Guidance, if a proposed project or activity that is physically situated within an area under the jurisdiction of Dubai is expected to cause or is likely to extend its direct or cumulative environmental impact during construction or operation outside the areas under the jurisdiction of Dubai, the EIA document has to be submitted to and approved by the MoCCaE.



2 Environmental Clearance Requirements

Project Owners or their authorised representative who intend to secure an EC from the DM-ESD for the proposed Project shall comply with the requirements and follow the process provided in this Chapter.

2.1 EC Application Process

The EC application process implemented by the DM-ESD in the Emirate of Dubai is reflected in Figure 4 and discussed in the following sections.

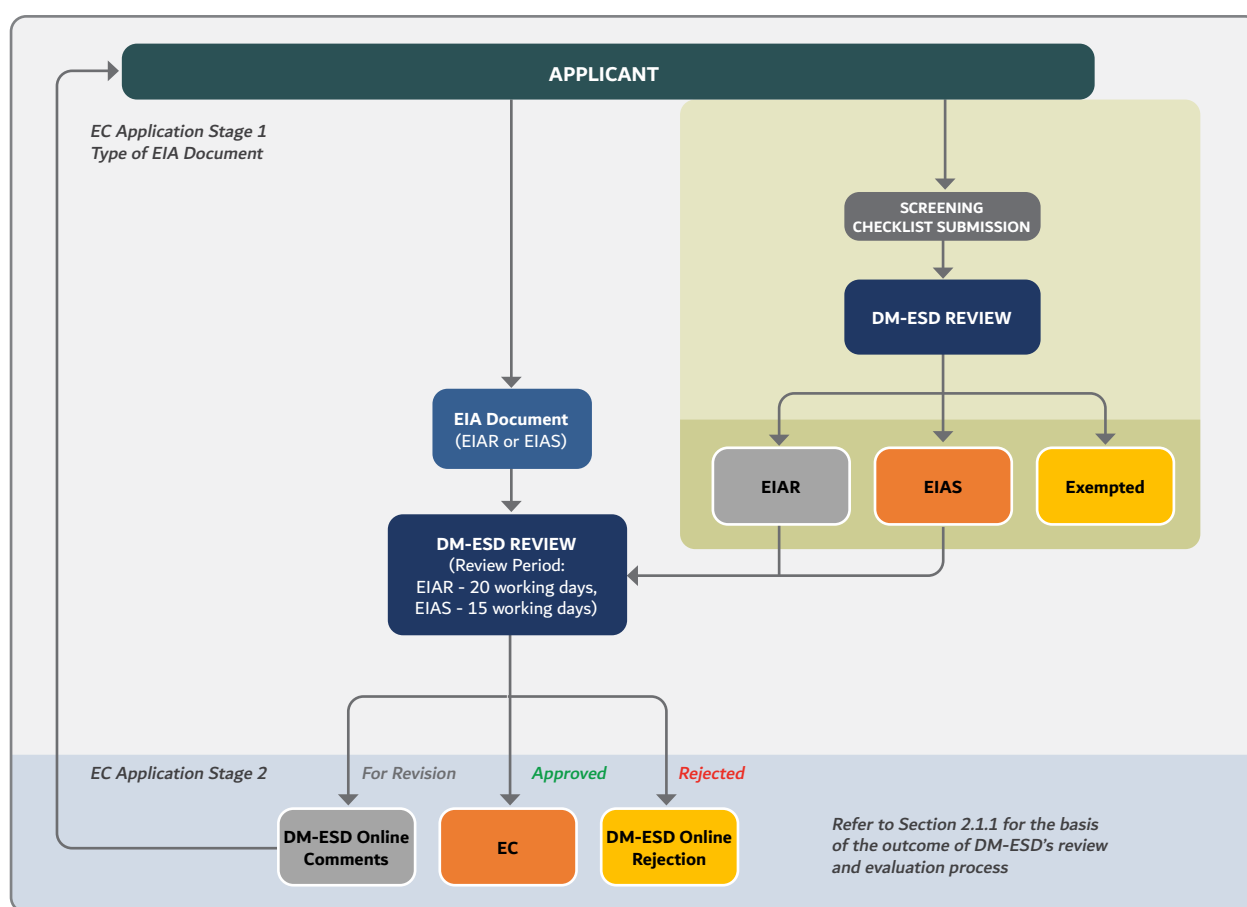


Figure 4: EC Application Process for Development and Infrastructure Projects

Note: "Exempted" = "EIA Not Required"

2.1.1 Projects Subjected to an EIA

As mandated by the Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, and the Cabinet Decree No. (27) of 2021 of the Council of Ministers, no development or infrastructure project shall start the activity before obtaining the environmental license through the conduct of an Environmental Impact Assessment (EIA). The environmental license shall also be obtained prior to any modification of any development or infrastructure projects, establishments, or activities listed in this Guidance, that will have significant environmental impact. The environmental license referred to is the Environmental Clearance (EC), which is the approval issued by the Dubai Municipality Environmental Sustainability Department (DM-ESD) to development or infrastructure projects that satisfy the EIA requirements.

For a Project that falls under any of the classifications in Section 1.1, the first stage of EC application process involves the preparation and submission of all the required documents and information on the proposed Project, as specified in the following sections, to be carried out by the Environmental Consultant authorised by the Project Owner. This includes the execution of the required EIA Study and the DM-ESD review process.

With reference to the Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, and the Cabinet Decree No. (27) of 2021 of the Council of Ministers, the Ministry or the competent authority, according to the circumstances, shall notify the Applicant of the decision issued regarding his application, within thirty (30) days from the date of completing all the requirements of the application. The DM-ESD review and evaluation process for an EIAR is not more than twenty (20) working days, and for EIAS not more than fifteen (15) working days.

The second and final stage is the decision by the DM-ESD on the EC application. It is based on the outcome of the review and evaluation process of the submitted EIAR or EIAS. The final decision will be one of the following:

1. **Approval**, which leads to the issuance of EC (refer to Section 3.1); or
2. **Revision**: Should the submitted EIA document requires revision, DM-ESD will provide the review comments, request for clarification or require additional information through the Online EC Application System. It shall be expected that within one (1) month period, the revised EIA document incorporating all the comments, with a referenced Comments Resolution Sheet (CRS) shall be submitted. A CRS is a form prepared by an appointed Environmental Consultant or the Applicant, as applicable, specifying the response to each of the comments or concerns received from DM-ESD associated with the submitted EIA document. Each comment or concern and the corresponding response shall be presented in a tabulated manner, clearly and accurately, providing all technical justification and references, to facilitate a speedy review process. The responses shall also be incorporated into the revised EIA document. On some occasions and as deemed necessary by DM-ESD, a technical clarification meeting with the appointed Environmental Consultant or the Project Management Team, and the Project Owner (refer to Roles and Responsibilities) may be required, to resolve any outstanding issues or conflicting responses. Should the revised EIA document is not received within one (1) year from the date of issuance of the comments, the “EIA Study” shall no longer be considered valid, and a new study shall be required; or
3. **Rejection**: Rejection of the submitted EIAR or EIAS (refer to Section 3.2).

DM-ESD’s review timeframe starts from the date the application is received through the EPBI Online Application System and shall automatically stop once AESEAS issued its official reply or if a decision is made through the online system. The timeframe will automatically reset once the submission of the revised document(s), missing or incomplete required document(s), or any submission modification is received again through the online system.

2.1.2 Screening Process

Most of the Projects in Dubai are included in either the Mandatory (Section 1.1) or Exclusion (Section 1.2) Project Categorisation Lists. In case a Project does not belong to any category or the Applicant is unsure, the Project shall be subjected to a screening process on a case-by-case basis. For this purpose, the Applicant shall complete a Screening Checklist (refer to Annex 1) and submit to EIA@dm.gov.ae along with the supporting documentation deemed necessary by the Applicant.

The purpose of the Screening Checklist is to provide information on the Project and the reasonably foreseeable impacts on the environment for the DM-ESD to reach a decision if an EIA study is deemed required for the Project. The decision, which will be communicated to the Applicant through the same Screening Checklist, may be one of the following:

- EIAR or EIAS is required;
- EIA study is not required; or
- Additional information is required to come up with a decision on the type of EIA study.

The Screening Checklist with DM-ESD’s decision will be returned to the Applicant after the evaluation.

2.2 EIA Documents for EC Application

There are two types of environmental assessment document required in obtaining an EC for a Project - Environmental Impact Assessment Report (EIAR) and Environmental Impact Assessment Summary (EIAS). The following sections describe the differences between these documents.

2.2.1 EIA Report (EIAR)

An Environmental Impact Assessment Report (EIAR) is required for the Projects listed in Section 1.1 of this Guidance, in which unmitigated impacts are expected to be “significant, sensitive, and diverse”. The objective of an EIAR is to present to the DM-ESD all detailed information on the need for the proposed Project, its nature, size, and location; environmental conditions (through baseline surveys) of the proposed Project site; potentially significant environmental impacts including predictions through numerical model simulations; proposed measures to avoid, mitigate, or compensate for the predicted impacts; and monitoring plans. All these information must be complete, accurate and clear in order to facilitate the decision-making process for issuing an EC.

The EIAR also serves as a statement of commitment by the Project Owner to comply with the environmental protection laws and regulations of the UAE, Dubai, and international conventions, as well as a binding agreement with the DM-ESD on the implementation of measures to protect the natural and built environment.

Guidance on preparing an EIAR is provided in **ANNEXURES FOR DEVELOPMENT AND INFRASTRUCTURE PROJECTS – Annex 2**, which is divided into two (2) parts:

PART I provides guidance on the structure and contents of an EIAR;

PART II provides the checklist, which needs to be prepared by the Environmental Consultant as part of the submission of the EIAR.

Annex 4 provides the guidance on the scope of the required environmental baseline surveys and modelling requirements.

2.2.2 EIA Summary (EIAS)

An Environmental Impact Assessment Summary (EIAS) is a report on a “qualitative” EIA that is required for the Projects listed in Section 1.1 of this Guidance, which are expected to have impacts that are “less significant, less sensitive, and less diverse” and where mitigation measures can be easily incorporated into the Project design and operations. An EIAS follows the same assessment process as the EIAR, but unlike an EIAR, the description of the environmental resources and conditions in the Project study area can be based on existing or secondary data. If secondary baseline data are not available, primary data should be collected through baseline survey in order to establish the environmental baseline and provide complete description of the characteristics of the scoped-in environmental resource. The study is carried out and presented in a high level and qualitative approach, and not as detailed as the EIAR.

Guidance on preparing an EIAS is provided in **ANNEXURES FOR DEVELOPMENT AND INFRASTRUCTURE PROJECTS – Annex 3**, which is also divided into two (2) parts:

PART I provides guidance on the structure and contents of an EIAS;

PART II provides the checklist, which needs to be prepared by the Applicant as part of the submission of the EIAS.

Guidance on the scope of the environmental baseline survey and modelling, if deemed required, is provided in **ANNEXURES FOR DEVELOPMENT AND INFRASTRUCTURE PROJECTS – Annex 4**.

2.3 Submission Requirements

The following information and documents shall be completed and submitted by the Applicant through the DM website (www.dm.gov.ae, Service Request Name: *Request for Environmental Clearance for Development and Infrastructure Projects*):

- Basic details of the Project and the Project Owner;
- Details of the Applicant (e.g. contact information and focal person of the Applicant);
- Details of the valid Dubai license (i.e. commercial, etc.) of Project Owner and appointed Environmental Consultants, if applicable;
- Letter of appointment from the Project Owner to the Applicant to secure the EC on their behalf, addressed to the Air Environment Sustainability and Environmental Assessment Section Manager;
- Copy of the Affection Plan / Site Plan (mandatory only if issued by Planning Authorities other than DM);
- Copy of the latest Master Plan (mandatory only if issued by Planning Authorities other than DM)/Site Layout; and
- EIA Document (i.e. EIAR or EIAS either in word document or readable PDF with working table of contents links).



2.4 EC Renewal

The EC issued to the Project Owner specifies the date of its validity, and the conditions also state the requirements for the EC renewal. The Project Owner shall renew the EC, whenever required, at least thirty (30) days prior to its expiry date, unless otherwise specified in the original EC. The EC renewal is subject to the compliance of the Project Owner and its appointed Main Contractor, or Environmental Consultant, as applicable, with the conditions stipulated therein, and the resolution of any violations or penalties resulting from non-compliance. The EC renewal process implemented by the DM-ESD is reflected in Figure 5 and the submission requirements are discussed in the following section.

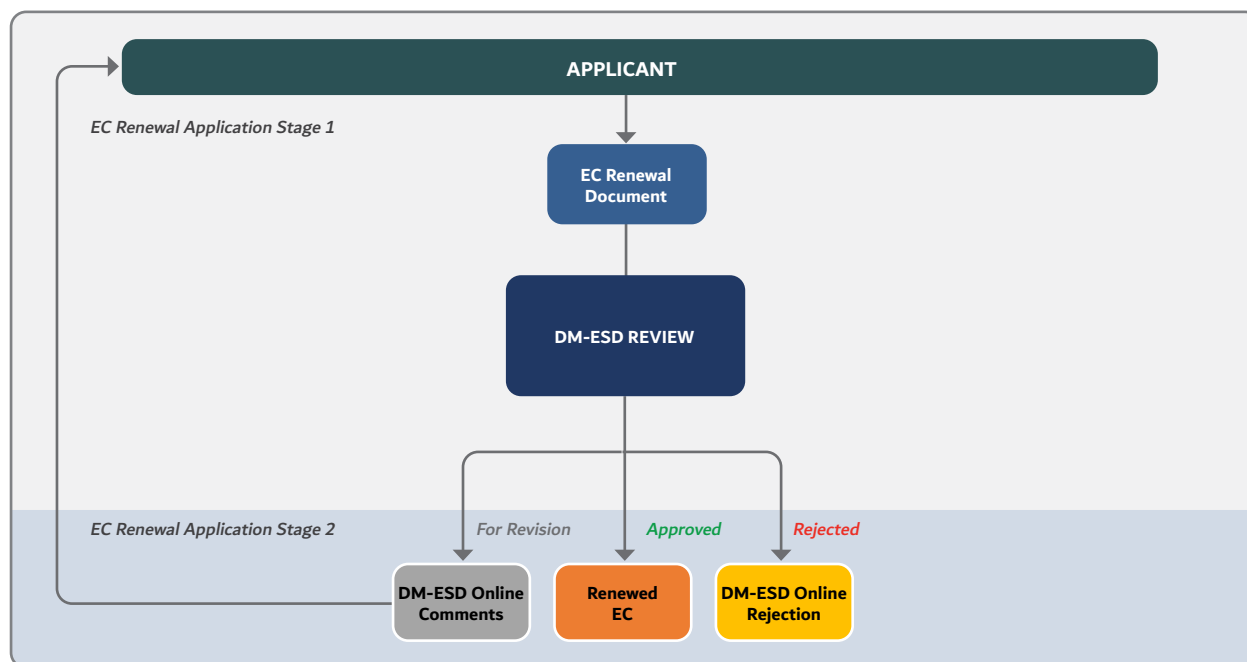


Figure 5: EC Renewal Process for Development and Infrastructure Projects

Submission Requirements

For the purpose of renewing the issued EC, the following information and documents shall be completed and submitted by the Applicant through the DM website (www.dm.gov.ae, Service Request Name: *Request for Environmental Clearance for Development and Infrastructure Projects*):

- Basic details of the Project and the Project Owner;
- Details of the Applicant (e.g. contact information and focal person of the Applicant);
- Details of the valid Dubai license (i.e. commercial, etc.) of Project Owner and appointed Environmental Consultants, if applicable;
- Letter of appointment from the Project Owner to the Applicant to renew the EC on their behalf, addressed to the Air Environment Sustainability and Environmental Assessment Section Manager;
- Copy of the Affection Plan / Site Plan (mandatory only if issued by Planning Authorities other than DM); and
- Copy of the latest Master Plan (mandatory only if issued by Planning Authorities other than DM)/ Site Layout.

Non-renewal of the EC will be considered a violation and may result in the imposition of penalties as may be determined by the ECS.

2.5 EC Amendment

The EC is issued to the specific Project Owner and Project scope declared during the conduct of the EIA study and EC application stage. Whenever there is change in the Project Owner or inclusions of new Project components, modification on the Project or any components not covered by the issued EC that will have significant environmental impact, the Project Owner or its authorised representative shall secure prior approval from the AESEAS and consequently request for the amendment of the existing EC. The request for EC amendment shall be applied at least thirty (30) days prior to the implementation of the proposed change. The EC amendment process implemented by the DM-ESD is reflected in Figure 6 and the submission requirements are discussed in the following section.

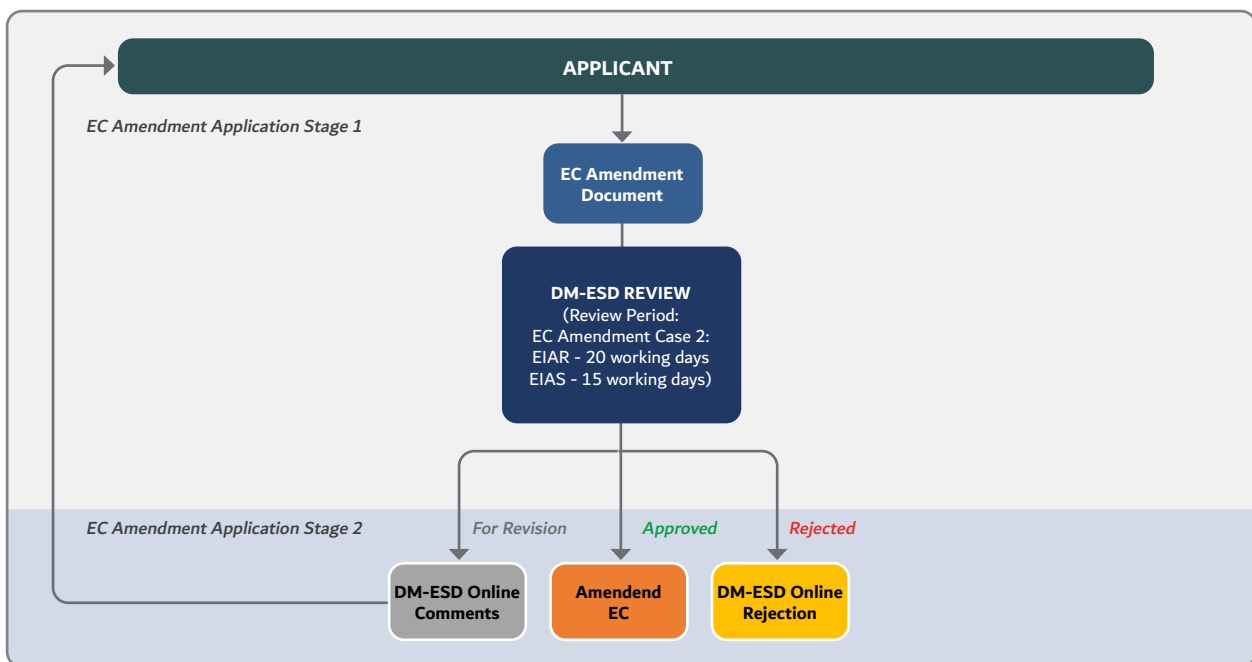


Figure 6: EC Amendment Process for Development and Infrastructure Projects

There are two (2) reasons that can trigger EC amendment request:

Case 1. Change in Project ownership or Project name

In this amendment request, the appointment of an Environmental Consultant is not mandatory. The amendment request may be applied by any company authorised by the Project Owner, which may be an Environmental Consultant, or Contractor as applicable.

Case 2. Change in Project location, change in Master Plan, new or altered Project component

In this amendment request, only a DM-ESD-registered Environmental Consultant may submit the application.

Submission Requirements

For the purpose of amending the issued EC, the following information and documents shall be completed and submitted by the Applicant through the DM website (www.dm.gov.ae, Service Request Name: *Request of Environmental Clearance for Development and Infrastructure Projects*):

EC Amendment Due to Change in Project Ownership or Project Name:

- Basic details of the Project and the Project Owner;
- Details of the Applicant (e.g. contact information and focal person of the Applicant);

- Details of the valid Dubai license (i.e. commercial, etc.) of Project Owner and appointed Environmental Consultants, if applicable;
- Letter addressed to the Air Environment Sustainability and Environmental Assessment Section Manager from the Project Owner specifying the purpose of the request for EC Amendment;
- Letter of appointment from the Project Owner to the Applicant to request for EC amendment on their behalf, addressed to the Air Environment Sustainability and Environmental Assessment Section Manager;
- Copy of the Affection Plan / Site Plan (mandatory only if issued by Planning Authorities other than DM);
- Copy of the latest Master Plan (mandatory only if issued by Planning Authorities other than DM)/ Site Layout; and
- Other supporting documents, as deemed necessary by the Applicant (e.g. Copy of the valid Dubai license of new Project Owner).

EC Amendment Due to Change in Project Location, Change in Master Plan, New or Altered Project Component:

- Basic details of the Project and the Project Owner;
- Details of the Applicant (e.g. contact information and focal person of the Applicant);
- Details of the valid Dubai license (i.e. commercial, etc.) of Project Owner and appointed Environmental Consultants, if applicable;
- Letter addressed to the Air Environment Sustainability and Environmental Assessment Section Manager from the Project Owner specifying the purpose of the request for EC Amendment;
- Letter of appointment from the Project Owner to the Applicant to request for EC amendment on their behalf, addressed to the Air Environment Sustainability and Environmental Assessment Section Manager;
- Copy of the Affection Plan / Site Plan (mandatory only if issued by Planning Authorities other than DM);
- Copy of the latest Master Plan (mandatory only if issued by Planning Authorities other than DM)/ Site Layout; and
- EIA Document (i.e. EIAR or EIAS either in word document or readable PDF with working table of contents links).



Decision-Making on Granting EC

After the successful completion of the EIA Process including the DM-ESD review and evaluation, the final stage is the decision from the DM-ESD. The final decision on the Project's EC application may be in the form of an EC or a Rejection through the Online EC Application System. The EC is only issued once the DM-ESD is fully satisfied that the proposed Project is assessed not to cause adverse impact to the environment. As a minimum, therefore, all of the requirements for carrying out the EIA study must be met, Project implementation establishes conformance with environmental laws, best environmental management practices satisfactorily demonstrated, and all pertinent documents as per this Guidance have been properly submitted.

3.1 Issuing the Environmental Clearance (EC)

The Environmental Clearance (EC) is the "license", as per Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, and the Cabinet Decree No. (27) of 2021 of the Council of Ministers, being issued by the DM-ESD to Projects that satisfy the EIA requirements. The EC specifies the following information:

- Name of the Project Owner;
- Name of the Project;
- Location of the Project including the specific plot number and community as per the Affection Plan;
- Coverage or scope of the EC;
- Date of Issue and Validity (usually 2 years, subject to renewal; DM-ESD reserves the right to limit the validity on a Project-specific basis); and
- Compliance Conditions.

The Compliance Conditions stipulate the set of environmental requirements that must be complied with by the Project Owner, the Main Contractor, or the Environmental Consultant, as applicable, during the implementation of the Project. The Compliance Conditions specify the following:

- General Conditions stating the mandatory compliance with the Federal Law and applicable Environmental Laws & Regulations of the Emirate of Dubai;
- Specific environmental compliance obligations for the Project Owner and its appointed Main Contractor, or Environmental Consultant, as applicable;
- Required specific environment protection measures and other means that ensure compliance with all applicable regulations on environment protection as per the approved EIAR or EIAS;
- Document submission (if required); and
- Monitoring and reporting requirements.

The Project Owner shall note that if no action is taken within thirteen (13) calendar days after receipt of EC approval notification, the EC shall be rescinded. The Project will then be required to undergo the EIA study process again.

3.2 Rejecting the EC Application

The online EC application may be rejected, in accordance with the Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, and the Cabinet Decree No. (27) of 2021 of the Council of Ministers, for the following reasons:

- If the revised EIA document or response to DM-ESD comments is not received within six (6) months from the date of issuance of the comments;
- If the third submission of the EIA document still does not substantially satisfy the requirements as stipulated in this Guidance, or the DM-ESD technical comments have not been satisfactorily addressed;
- For EC Renewal Applications: If the pending requirement/s is/are not received within thirty (30) calendar

days from the date of issuance of the comments;

- For New EC and EC Amendment Applications: If the payment is not done within thirteen (13) calendar days from the date of approval; or
- If there is a duplicate submission.

The online EC application may also be rejected if the following information are either incorrect or incomplete:

- Application Type;
- Project Type; or
- EIA document.

4

Post EC Compliance Monitoring and Reporting

Post-EC Compliance Monitoring involves both Regulatory Monitoring (i.e. primarily Project site inspection performed by DM-ESD) and Self Monitoring (i.e. performed by the Main Contractor, Environmental Consultant or Environmental Management Consultant, as applicable). Regulatory Compliance Monitoring is conducted to ensure adherence by the Project Owner, and its appointed Main Contractor, Environmental Consultant, or Environmental Management Consultant, as applicable, to the conditions stipulated in the EC and the implementation of the mitigation and monitoring requirements detailed in the EMMP of the EIAR or EIAS. Records of Self Monitoring are submitted to DM-ESD as Environmental Performance Reports (EPRs). Data from permanent monitoring station, if required, may form part of the EPR.

Compliance Monitoring is carried out to:

1. Ensure that the EC conditions and the required mitigation measures are being implemented; and
2. Evaluate whether mitigation measures are working effectively.

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4.1. Regulatory Compliance Monitoring

Regulatory Compliance Monitoring by DM-ESD involves, but not limited to, site inspection to check and verify the status of the Project and the mitigation measures as per the approved EIAR or EIAS, and to record and assess the actual impacts of the Project, and to conduct desktop review of submitted documentation requirements as per the issued EC. To monitor the Project's environmental compliance, DM-ESD Officers and Engineers are assigned to a Project once the EC is issued.

The assigned DM-ESD Officers and Engineers evaluate Project's compliance with the EC Conditions, gather Project information if environmental damage occurs or public complaints are raised, and issue Notices of Violation (NOV) should non-compliances are observed and not corrected or if there are activities or Project components that are not covered by the EC. Issuance of NOVs shall be as per the mandate of the concerned DM-ESD Section.

4.2 Self Compliance Monitoring

Self Compliance Monitoring is usually performed by the Main Contractor or by an appointed Environmental Management Consultant, as applicable. Self Compliance Monitoring includes periodic site audits and inspections, as well as in-situ or ex-situ sampling and testing. Ex-situ samples shall be analysed by an Emirates International Accreditation Centre (EIAC)-accredited laboratory, or by the Dubai Central Laboratory (DCL). Through all stages of the Project, the Main Contractor or the Environmental Management Consultant, as applicable, shall establish and implement a system to create, maintain and manage comprehensive, accurate and reliable records covering all the environmental aspects of the works that are being undertaken on the Project site, including but not limited to, any environmental emissions, wastes, sampling and analysis, and incidents. This system and the records within it must comply with regulatory requirements as well as the applicable international best practices.

The Main Contractor or the Environmental Management Consultant, as applicable, shall ensure that appropriate records are retained for five (5) years after the EC issuance date. Depending on Project specific requirements, these records or summary reports shall be provided periodically to the ECS by the Main Contractor or by the Environmental Management Consultant, as applicable, through the submission of the EPR.

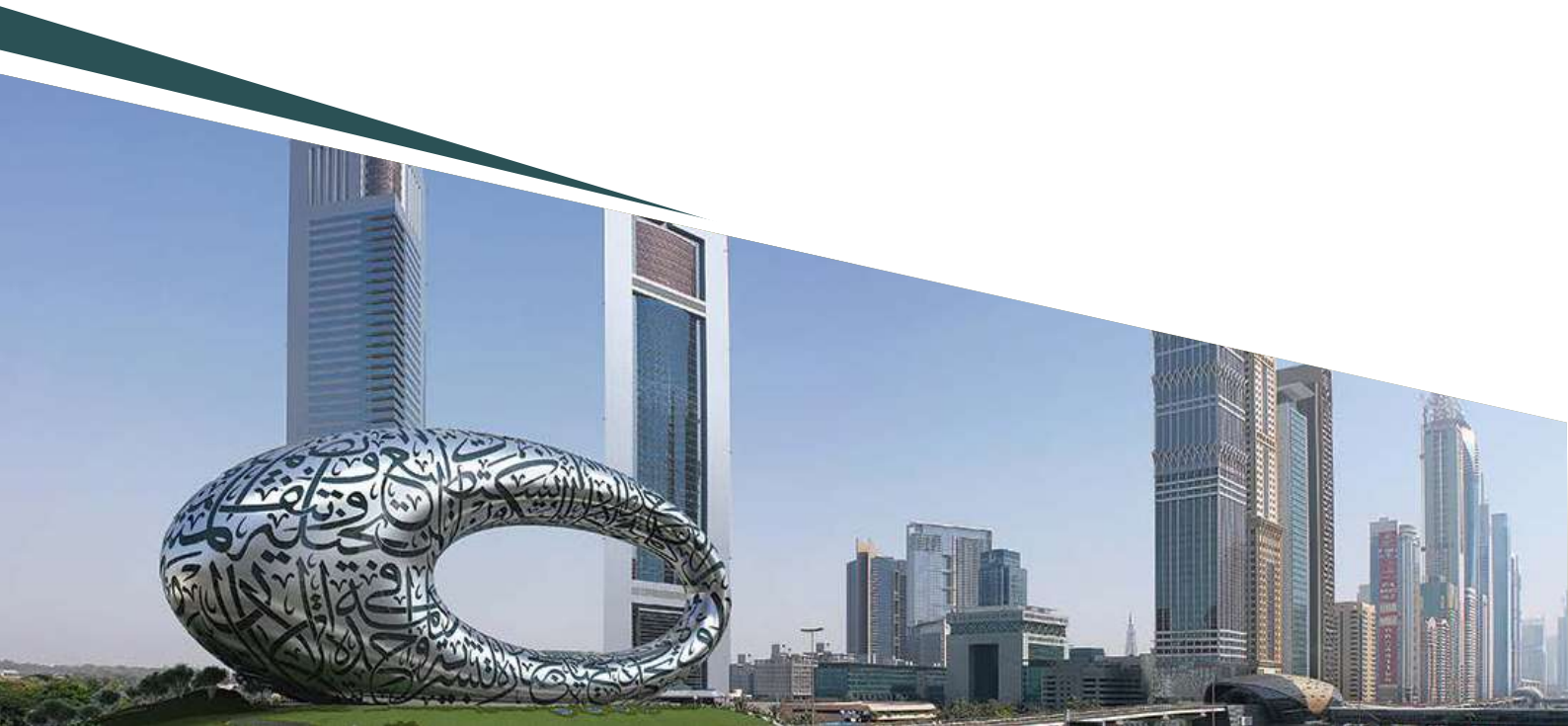
For coastal or marine Projects, and for Projects with the potential to adversely impact Sanctuaries and Protected Areas, a Construction Environmental Control Plan (CECP), based on the EIAR or EIAS recommendations, must be prepared and submitted with pertinent NOCs to the relevant DM-ESD Sections. Self Compliance Monitoring shall be clearly identified and specified in the CECP.

4.3 Environmental Performance Report

An Environmental Performance Report (EPR) must be submitted regularly, in accordance with the EC condition, by the Project Owner, Main Contractor, Environmental Consultant, or the Environmental Management Consultant, as applicable, over the duration of the Project implementation. The EPR provides the progress of the Project's implementation as well as the effectiveness of its environmental monitoring and management program. Frequency of EPR submission shall be decided by DM-ESD based on the EIAR or EIAS conclusions and recommendations.

An EPR shall contain the following:

- Identification of the environmental standards, performance measures, and statutory requirements that apply to the Project implementation;
- Assessment of the environmental performance of the implementation of the Project in relation to its compliance with the standards, performance measures, and statutory requirements stipulated in the EC;
- Identification of any non-compliance (with supporting documentation in the form of photographic evidence or monitoring data) with the conditions of the EC during the reporting period;
- If any non-compliance is identified, description of the actions and measures that were or are being performed to ensure compliance, responsible parties for each of these actions and measures, timeframe to implement the actions, and measurement or monitoring of the effectiveness of the corrective measures;
- Copy of complaints for the reporting period and a description of actions taken or being taken to address registered complaints;
- Results of all environmental monitoring required by the EC and other permits, including interpretations and trends or exceptions in these results;
- Drawings showing works progress, location of monitoring points, and location of mitigation measures (e.g. silt curtains).



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**Guidance for
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Volume 3

Guidance for Industrial Projects

As mandated by the Federal Law No. (24) of 1999 Regarding the Protection and Development of the Environment, and the Cabinet Decree No. (27) of 2021 of the Council of Ministers, no project or facility shall start the activity before obtaining the environmental license through the conduct of an Environmental Impact Assessment (EIA). The environmental license shall also be obtained prior to the modification of any of the projects, facilities, or activities listed in this Guidance. The environmental license referred to is the Environmental Clearance (EC), which is the approval issued by the Dubai Municipality Environmental Sustainability Department (DM-ESD) to projects that satisfy the EIA requirements.

This Guidance is intended for the use of Company Owners and Environmental Consultants that are planning to submit an application to secure an EC from DM-ESD. This Guidance describes the procedures and documentation required to properly carryout an EIA and obtain an EC for an industrial facility, project or activity in the Emirate of Dubai. Strict adherence to the Guidance by the Company Owner and/or the appointed Environmental Consultants and/or the authorized company representative is a necessary component of the EIA study and the EC application process. The Company Owner or his authorized representative who intend to secure an EC from the DM-ESD for the industrial projects (hereby referred to as the Applicant) shall comply with the EC requirements and follow the EC application process.

The first stage of EC application process involves the preparation and submission of all the required documents and information related to the industrial project or activity. The required documents shall be completed and submitted by the Applicant through the CIP Online EC Application System (**Service Request Name: “Request of Environmental Clearance for Industrial Projects”**) which may be accessed through the Dubai Municipality website (www.dm.gov.ae).

1

Industrial Activities Categorisation

The industrial activities in the Emirate of Dubai are categorised based on the following:

- Category A industrial activities – Major industrial activities that are expected to cause serious pollution due to large emissions of air pollutants such oil refineries, petrochemical & chemical-related plants, industrial waste treatment facilities, cement manufacturing, and similar or other industries with a high environmental impact.
- Category B industrial activities – Medium industrial activities that are expected to cause a lower environmental impact compared to industrial activities in Category A.
- Category C industrial activities – Light Industrial activities and/or professional activities that are expected to cause a minimal environmental impact.

For the full comprehensive list of industrial activities for Categories A, B, and C, refer to **ANNEXURES FOR INDUSTRIAL PROJECTS – Annex 1**. In any case that there are more than two (2) industrial activities being proposed and are of a different category, the preparation of the EIA document will be according to the activity that has a higher or more significant environmental impact

1.1 Category A Industrial Activities

The following sub-sections provide the required documents, review timeframe, and process flow to secure an EC for Category A industrial activities.

1.1.1 Required Documents for Category A

The required documents to obtain Environmental Clearance (EC) for Category A industrial activities are the following:

1. Copy of valid license issued by Dubai Economy & Tourism (DET) or any other licensing authorities in the Emirate of Dubai

2. Required (DET) documents for issuing a new license and/or amendment of existing licenses:
 - Initial approval
 - Trade Name Reservation Certificate
3. No objection certificate for practicing the approved activities by the concerned licensing authority on the plot if it is not subject to (DM-Executive Planning Department) approval
4. Environmental Impact Assessment Report (EIAR) for major industrial activities - (Category A)
5. Copy of the company's Memorandum of Association or copy of the commercial register showing the share capital of the company
6. Letter of appointment from the project owner or company to the applicant applying for the Environmental Clearance on their behalf

Note: The customer is not required to apply for an Environmental Clearance in case the license is based on an administrative office. However, Environmental Clearance should be obtained before starting the industrial activities.

1.1.2 Environmental Impact Assessment Report (EIAR) for Major Industrial Activities (Category A)

With reference to the Federal Law No. 24 of 1999 for the Protection and Development of the Environment, and the Cabinet Decree No. (27) of 2021 of the Council of Ministers, Environment Impact Assessment Report (EIAR) for Major Industrial Activities under Category A is the main requirement for obtaining the Environmental Clearance (EC). The EIAR must be submitted in English language and should contain the following:

1. Description of the Site and Surrounding Areas of the Industrial Facility:

- Site map showing the geographical location and sensitive receptors within 1-Km radius from the facility.
- Air quality and odour baseline measurement to be conducted near the facility boundaries (Main requirement for some of the activities listed in **ANNEXURES FOR INDUSTRIAL PROJECTS – Annex 2**).
- Soil and groundwater analysis (Main requirement for some of the activities listed in **ANNEXURES FOR INDUSTRIAL PROJECTS – Annex 2**).
- A description focused on biodiversity, flora and fauna, archeological and cultural values.

2. Description of Industrial Activities:

- Details of all proposed/ existing industrial activities, process flowchart, and production capacity of the facility.
- Production processes and final products.
- List of all raw materials and dangerous goods to be used in the production processes.
- List of all machines & equipment to be used in the production processes.
- Technical material specifications & safety datasheets (MSDS) of raw materials and dangerous goods.

3. Emissions and Wastes Streams:

- Details on sources, types, and amounts of expected noise and air emissions and their provided control methods.
- Air dispersion and odorous gases numerical modeling (Main requirement for some of the activities listed in **ANNEXURES FOR INDUSTRIAL PROJECTS – Annex 2**).
- Detailed list on hazardous waste sources (solid, liquid, gaseous) generated from the production processes, including volume, onsite treatment or disposal.

4. Expected Environmental Impacts on (Air, Water and Soil) Including Proposed Mitigation Measures:

- Description of all potential environmental impacts across each production and operational process, including the discussion and evaluation of their impacts on the environmental components.
- Presenting proposed environmental mitigation measures for both potential environmental impacts and monitoring programs, to ensure the facility's compliance with applicable environmental laws and legislations.

5. Statement of Commitment

This Chapter shall include the statement of commitment of the Company Owner to the implementation of the EIA requirements and compliance with the Environmental Compliance Conditions for Industrial Projects are provided in Chapter 3 of this Volume. The EIAR also serves as a statement of commitment by the Company Owner to comply with the environmental protection laws and regulations of the UAE, Dubai, and international conventions, as well as a binding agreement with the DM-ESD on the implementation of measures to protect the natural and built environment. The Company Owner's acknowledgment should declare that all the details, information and documents submitted for the purpose of obtaining the Environmental Clearance are correct.

Depending on the nature and size of the manufacturing processes, the Applicant may be requested to provide additional information and/or attach other documents.

In case an Environmental Consultant will be appointed or will be required in the conduct of the EIA study and preparation of the EIA Report for Major Industrial Activities, the list DM-ESD-registered Environmental Consultants is available in the DM website (www.dm.gov.ae) under Information & Circulars > Environment and Coasts > Air Environment Sustainability and Environmental Assessment Section (<https://www.dm.gov.ae/municipality-business/environment-and-coasts/>).

1.1.3 Review Timeframe for Category A

The timeframe for the evaluation of the submitted documents, within which DM-ESD shall issue an "official reply" to the Company Owner or a "decision" on the activities being applied for EC, is 10 working days. The processing timeframe starts from the date of the received submission through the CIP EC Online Application System. The processing timeframe shall automatically stop once AESEAS has issued an official reply or if a decision is made through the online system. The processing timeframe will automatically reset once the submission of the revised document(s), missing or incomplete required document(s), or any submission modification is received again through the online system.

The EC application process implemented by the DM-ESD for Category A industrial projects or activities is shown in Figure 1.

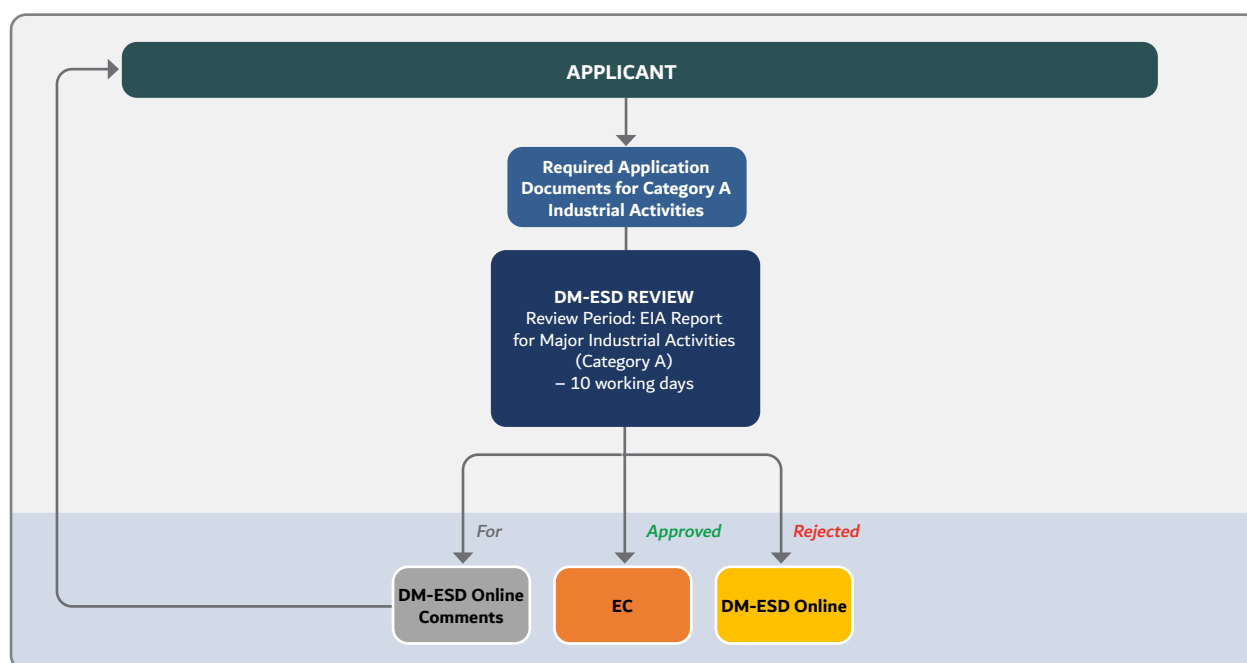


Figure 1: New EC Application Process for Category A Industrial Projects

1.2 Category B Industrial Activities

The following sub-sections provide the required documents, review timeframe, and process flow to secure an EC for Category B industrial activities.

1.2.1 Required Documents for Category B

The required documents to obtain Environmental Clearance (EC) for Category B industrial activities are the following:

1. Copy of valid license issued by Dubai Economy & Tourism (DET) or any other licensing authorities in the Emirate of Dubai
2. Required (DET) documents for issuing a new license and/or amendment of existing licenses:
 - Initial approval
 - Trade Name Reservation Certificate
3. No objection certificate for practicing the approved activities by the concerned licensing authority on the plot if not subject to (DM- Executive Planning Department) approval
4. Environmental Impact Assessment Summary Report for medium industrial activities -(Category B)
5. Copy of the company's Memorandum of Association or copy of the commercial register showing the share capital of the company
6. Letter of appointment from the project owner or company to the applicant applying for the EC on their behalf

Note: The customer is not required to apply for an Environmental Clearance in case the license is based on an administrative office. However, Environmental Clearance should be obtained before starting the industrial activities.

1.2.2 Environmental Impact Assessment Summary Report for Medium Industrial Activities (Category B)

For the editable form of the Environmental Impact Assessment Summary Report for Medium Industrial Activities (Category B), please refer to **ANNEXURES FOR INDUSTRIAL PROJECTS – Annex 3**.

Depending on the nature and size of the manufacturing processes, the Applicant may be requested to provide additional information and and/or attach other documents or submit an Environmental Impact Assessment Report.

The Environmental Impact Assessment Summary Report for Medium Industrial Activities – Category B also serves as a statement of commitment by the Company Owner to comply with the environmental protection laws and regulations of the UAE, Dubai, and international conventions, as well as a binding agreement with the DM-ESD on the implementation of measures to protect the natural and built environment. The Company Owner's acknowledgment should declare that all the details, information and documents submitted for the purpose of obtaining the Environmental Clearance are correct. The Company Owner should also undertake to comply with all the conditions and requirements provided in Chapter 3 of this Volume.



1.2.3 Review Timeframe for Category B

The timeframe for the evaluation of the submitted documents, within which DM-ESD shall issue an “official reply” to the Company Owner or a “decision” on the activities being applied for EC, is 5 working days. The processing timeframe starts from the date of the received submission through the AESEAS EC Online Application System. The processing timeframe shall automatically stop once AESEAS has issued an official reply or if a decision is made through the online system. The processing timeframe will automatically reset once the submission of the revised document(s), missing or incomplete required document(s), or any submission modification is received again through the online system.

The EC application process implemented by the DM-ESD for Category B industrial projects or activities is shown in Figure 2.

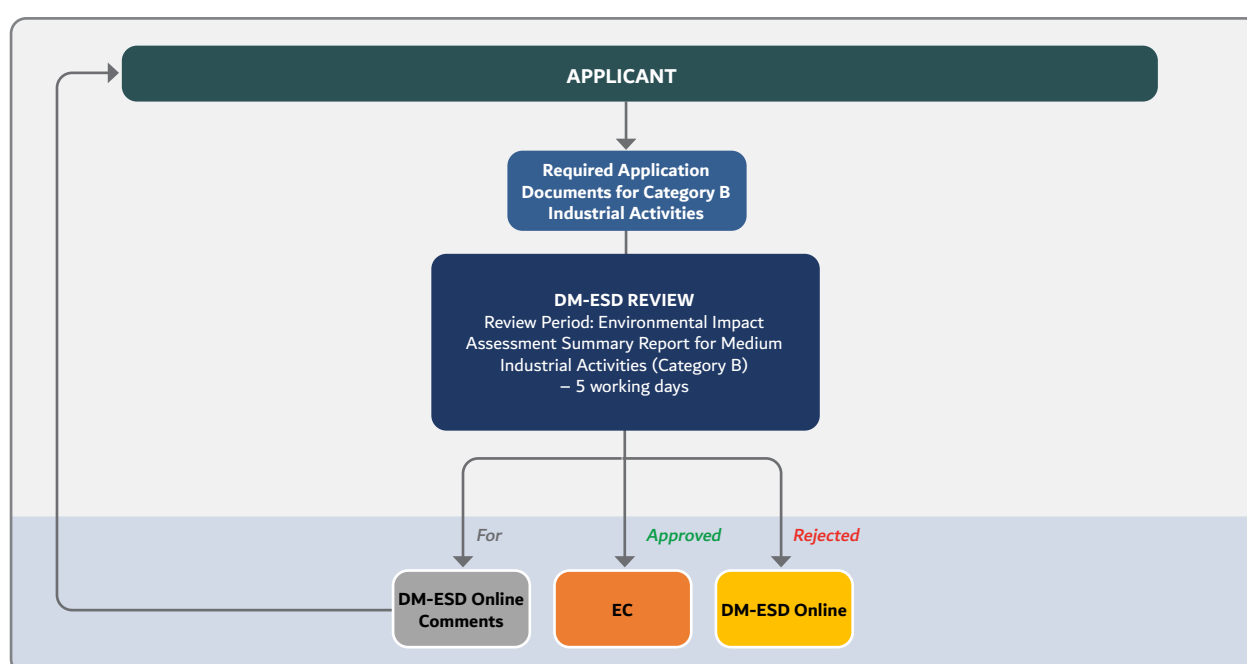


Figure 2: New EC Application Process for Category B Industrial Projects

1.3 Category C Industrial Activities

The following sub-sections provide the required documents, review timeframe, and process flow to secure an EC for Category C industrial activities.

1.3.1 Required Documents for Category C

The required documents to obtain Environmental Clearance (EC) for Category C industrial activities are the following:

1. Copy of valid license issued by Dubai Economy & Tourism (DET) or any other licensing authorities in the Emirate of Dubai
2. Required (DET) documents for issuing a new license and/or amendment of existing licenses:
 - Initial approval
 - Trade Name Reservation Certificate
3. No objection certificate for practicing the approved activities by the concerned licensing authority on the plot if not subject to (DM- Executive Planning Department) approval.
4. Environmental Impact Assessment checklist for Light Industrial Activities - (Category C)
5. Copy of the company's Memorandum of Association or copy of the commercial register showing the share capital of the company

6. Letter of appointment from the project owner or company to the applicant applying for the EC on their behalf

Note: The customer is not required to apply for an Environmental Clearance in case the license is based on an administrative office. However, Environmental Clearance should be obtained before starting the industrial activities.

1.3.2 Environmental Impact Assessment Checklist for Light Industrial Activities (Category C)

For the editable form of the Environmental Impact Assessment Checklist for Light Industrial Activities (Category C), please refer to **ANNEXURES FOR INDUSTRIAL PROJECTS – Annex 4**.

Depending on the nature and size of the manufacturing processes, the Applicant may be requested to provide additional information and/or attach other documents or submit an Environmental Impact Assessment Summary Report.

The Environmental Impact Assessment Checklist for Light Industrial Activities – Category C also serves as a statement of commitment by the Company Owner to comply with the environmental protection laws and regulations of the UAE, Dubai, and international conventions, as well as a binding agreement with the DM-ESD on the implementation of measures to protect the natural and built environment. The Company Owner's acknowledgment should declare that all the details, information and documents submitted for the purpose of obtaining the Environmental Clearance are correct. The Company Owner should also undertake to comply with all the conditions and requirements provided in Chapter 3 of this Volume.

1.3.3 Review Timeframe for Category C

The timeframe for the evaluation of the submitted documents, within which DM-ESD shall issue an “official reply” to the Company Owner or a “decision” on the activities being applied for EC, is 3 working days. The processing timeframe starts from the date of the received submission through the CIP EC Online Application System. The processing timeframe shall automatically stop once AESEAS has issued an official reply or if a decision is made through the online system. The processing timeframe will automatically reset once the submission of the revised document(s), missing or incomplete required document(s), or any submission modification is received again through the online system.

The EC application process implemented by the DM-ESD for Category C industrial projects or activities is shown in Figure 3.

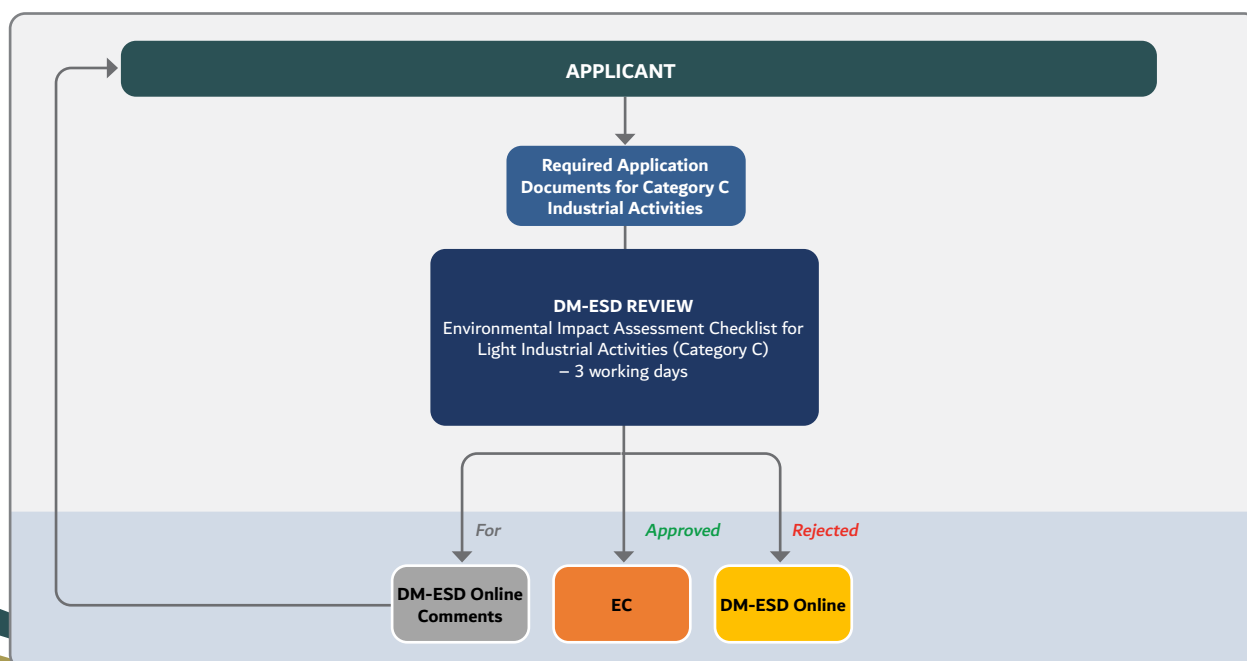


Figure 3: New EC Application Process for Category C Industrial Projects

2

Decision-Making on Granting EC

After the successful completion of the Environmental Clearance (EC) application process including the DM-ESD review and evaluation, the final stage is the decision from the DM-ESD. The final decision on the industry's EC application may be in the form of an EC or a Rejection through the Online EC Application System. The EC is only issued once the DM-ESD is fully satisfied that the industrial project is assessed not to cause adverse impact to the environment. As a minimum, therefore, all of the necessary requirements for EC application must be met, operation of the industrial project establishes conformance with environmental laws and all pertinent documents as per this Guidance have been properly submitted.

2.1 Approving the Application and Issuing the EC

The EC is issued once the application is approved and the payment has been made. The EC specifies the following information:

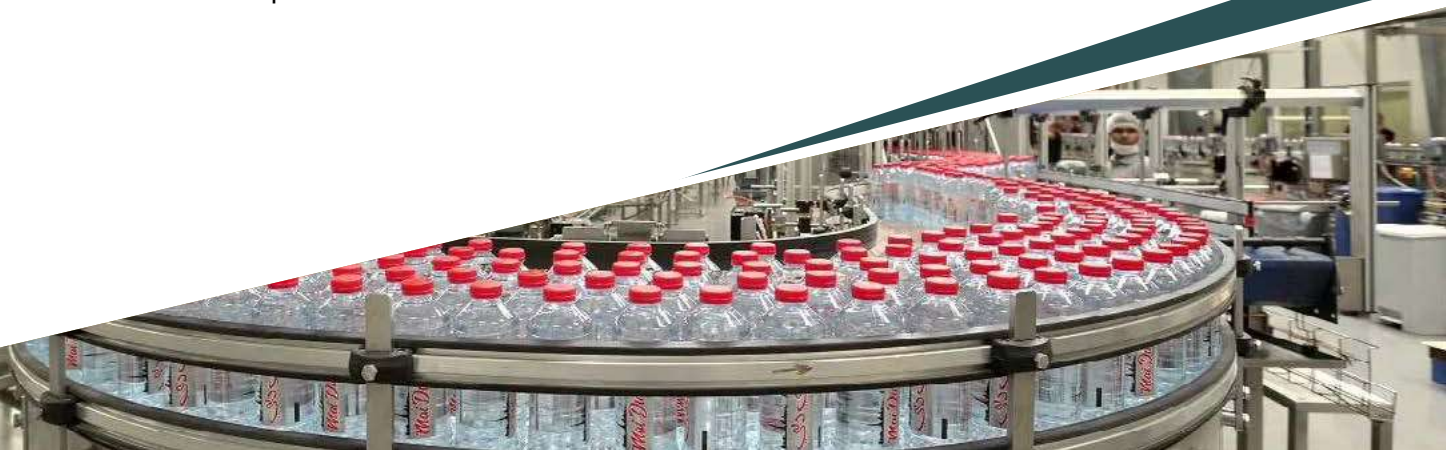
- Name of the Company;
- License Number;
- Location of the Company including the specific plot number and community as per the Tenancy Contract or Affection Plan;
- Activities of the Company covered by the EC and the Industry Category (i.e. Category A, B or C);
- Compliance Conditions: These Conditions stipulate the set of environmental requirements that must be complied with by the Company Owner. The Compliance Conditions specify the following:
 - General Conditions stating the mandatory compliance with the Federal Law and applicable Environmental Laws & Regulations of the Emirate of Dubai;
 - Specific environmental compliance obligations for the Company or industrial facility, as applicable;
 - Required specific environment protection measures and other means that ensure compliance with all applicable regulations on environment protection as per the approved Environmental documents submitted.

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2.2 Rejecting the EC Application

The online EC application may be rejected for the following reasons:

- If the revised EIA document or response to DM-ESD comments is not received within thirty (30) calendar days from the date of issuance of the comments;
- For EC Renewal Applications: If the pending requirement/s is/are not received within thirty (30) calendar days from the date of issuance of the comments;
- For New EC and EC Amendment Applications: If the payment is not done within thirteen (13) calendar days from the date of approval; or
- If there is a duplicate submission.



3

Environmental Compliance Conditions for Industrial Projects

The Company Owner should comply with the following conditions and requirements:

Environmental Compliance Conditions:

1. The company should only undertake the specified activities in the same Location / Plot number mentioned in the Environmental Clearance (EC). Prior approval shall be secured from the Air Environment Sustainability and Environmental Assessment Section (AESEAS) for any expansion or alteration of company activities and facilities and/or modification of the license (name, location, activities).
2. The company should keep a copy of the EC at the premises at all times, and should allow access and assist representatives of the Dubai Municipality-Environmental Sustainability Department (DM-ESD) in carrying out inspections, incident investigations, taking pictures, and obtaining relevant information on sources of emission or waste, at any time.
3. The EC is not a substitute for other regulatory permits, and its issuance does not exempt the company from securing other government agencies' and/or departments' approvals and from enforcing their rules and regulations.
4. The EC shall be renewed at least thirty (30) days prior to its expiry date. The renewal of the EC is subject to compliance with the conditions stipulated in the previously issued EC.
5. Any environment-related incidents and complaints shall be reported immediately to the Environmental Control Section (ECS) through **ECS@dm.gov.ae**, within twenty-four (24) hours. The incident report shall describe the likely cause, the time of occurrence, and the conditions under which an incident occurred, the extent of the impact, and the remedial actions undertaken.
6. Adequate air emission control and mitigation measures shall be implemented to avoid or minimise air and/or odour pollutants and noise associated with the company activities. All discharges to the air environment shall comply with the allowable limits prescribed in the "Federal Law No. 24 of 1999 for the protection and Development of the Environment", its Implementing Rules and Regulations and its Amendments or as adopted by DM and mentioned in the (EC) conditions.
7. Process wastewater generated from production and a plant or machine/equipment maintenance, shall be separately collected for storage and/or treatment; with quality to comply with the trade waste disposal standards and requirements, in accordance with the DM Waste Operations Department's requirement.
8. Any type of hazardous waste generated from the company activities (liquid, solid, gaseous); shall be segregated, collected, transported, and disposed of properly in accordance with the DM Waste Operations Department's requirement.
9. Storage of dangerous goods in company premises, shall have necessary permits from Dubai Civil Defense (DCD).
10. The consumption of ozone-depleting substances (ODS), such as in refrigeration, air conditioning, and foam applications shall be in accordance with The Montreal Protocol on Substances that Deplete the Ozone Layer. The use of phased-out ODS (e.g. CFCs, halons, carbon tetrachloride, methyl chloroform, methyl bromide, hydrobromofluorocarbons) is strictly prohibited. Facilities shall replace ODS with zero-ozone depletion potential or low-global warming potential substitutes, and must recover, reclaim or dispose ODS using best practices.

Specific Conditions for Projects with Odour Emitting Sources

The following compliance conditions shall be applicable for, but not limited to, Industrial Projects with sources of odorous gases such as Farming Facilities, Municipal Organic Waste Treatment or Recycling or Composting Facility, Organic Fertilizer Manufacturing, etc., in addition to the Environmental Compliance Conditions:

11. Adequate controls and mitigation measures shall be implemented for all air emissions associated with the Industrial activities. All emissions to the air environment shall comply with the limits provided in the Cabinet Decree No. (12) of 2006. The ambient concentration of the below odorous gases shall not exceed the following limits at plot boundaries and nearby sensitive receptor(s).

Ambient Air (Odour)		
Parameter	Standard Limit	Source of Standard Limit
H ₂ S *	7 µg/m ³ (30-min averaging)	WHO
NH ₃ *	30 µg/m ³ (30-min averaging)	NIH, US
Dimethyl disulphide	56 µg/m ³ (10-min averaging)	Ontario's Ambient Air Quality Criteria
Dimethyl sulphide	30 µg/m ³ (10-min averaging)	
Methyl mercaptan	13 µg/m ³ (10-min averaging)	

*Continuous measurement for 24 hrs at plot boundary and nearby sensitive receptor(s)

12. Whenever a foul odour complaint arises, the Company shall conduct an air quality monitoring of the parameters listed in condition no. 11 at the odour control unit exhaust, plot boundaries, and at nearby sensitive receptors, for at least 1-hour to 24-hours (continuous) extendable to seven (7) days. The monitoring instrument should have an averaging time of at least 10 minutes, including records of wind direction and valid calibration certificate.



4

EC Renewal Application

The Environmental Clearance (EC) issued to the company specifies the date of its validity, and the conditions state the requirements for the EC renewal. The Company Owner or its authorized representative shall renew the EC, whenever required; at least thirty (30) days prior to its expiry date, unless otherwise specified in the original EC. The EC renewal is subject to the compliance of the Company Owner with the conditions stipulated therein, and the resolution of any violations or penalties resulting from non-compliance.

For the purpose of renewing the issued EC, the following documents shall be completed and submitted by the Applicant to the CIP Online EC Application System (**Service Request Name: “Request of Environmental Clearance for Industrial Projects”**) which may be accessed through the Dubai Municipality website (**www.dm.gov.ae**).

- Copy of the previous EC;
- Copy of the valid license issued by Dubai Economy and Tourism (DET) or any other licensing authorities in the Emirate of Dubai;
- Environmental Clearance renewal form (signed and stamped);
- Letter of appointment from the Company Owner to the Applicant to renew the EC on their behalf;
- Other supporting documents as deemed necessary by the applicant.

Non-renewal of the EC will be considered a violation and may result in the imposition of penalties as may be determined by the Environmental Control Section (ECS).

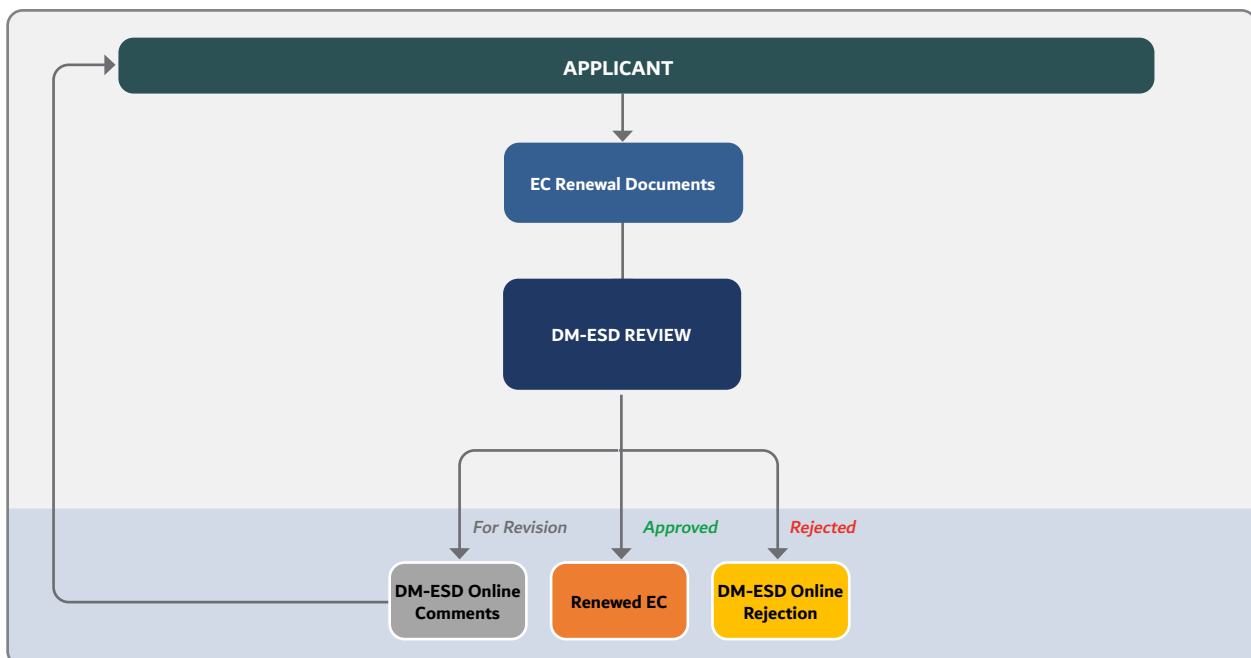


Figure 4: EC Renewal Process for Industrial Projects

5

EC Amendment Application

The Environmental Clearance (EC) should be amended whenever there is expansion, alteration of company activities and facilities, or modification of the license (name, location, activities), not covered by the issued EC. The request for EC amendment shall be applied at least thirty (30) days prior to the implementation of the proposed change.

For the purpose of amending the issued EC, the following documents shall be completed and submitted by the Applicant to the **(Service Request Name: “Request for Environmental Clearance for Industrial Projects”)** which may be accessed through the Dubai Municipality website (www.dm.gov.ae).

- Copy of valid license issued by Dubai Economy and Tourism (DET) or any other licensing authorities in the Emirate of Dubai;
- Required DET documents for an amendment of an existing licenses:
 - Follow-up receipt
 - Trade Name Reservation Certificate (for changing of company name)
 - No Objection Certificate (NOC) for practicing the approved activities by the concerned licensing authority on the plot if not subject to DM-EPD approval
- (EIA Report/Summary Report/Checklist) depending on the industrial activity category (i.e. Category A, B or C);
- Copy of the Company's Memorandum of Association (MoA) or copy of the commercial register showing the share capital of the Company
- Letter of appointment from the Company Owner to the Applicant to amend the EC on their behalf

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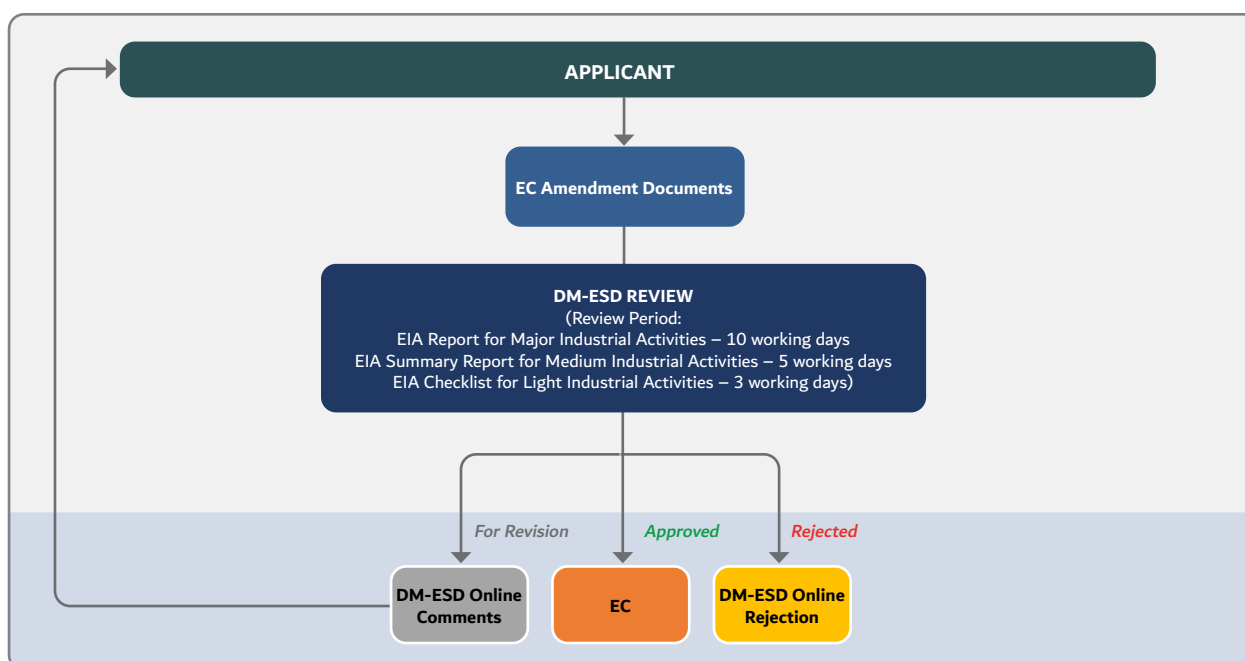


Figure 5: EC Amendment Process for Industrial Projects

6

Post EC Compliance Monitoring and Reporting

Post-EC Compliance Monitoring involves both Regulatory Monitoring (i.e. primarily site inspection of the industrial facility performed by DM-ESD) and, as applicable, self-monitoring in the form of Emissions Inventory reporting or submission. Regulatory Compliance Monitoring is conducted to ensure adherence by the Company Owner to the conditions stipulated in the EC.

6.1 Regulatory Compliance Monitoring

Regulatory Compliance Monitoring by DM-ESD-Environmental Control Section (ECS) involves, but not limited to, site inspection to check and verify the mitigation measures as per conditions stipulated in the EC, and to record and assess the actual impacts of the industrial project, and to conduct desktop review of submitted documentation requirements as per the issued EC. To monitor the environmental compliance, ECS Officers and Engineers are assigned to an industry per area once the EC is issued.

The assigned ECS Officers and Engineers evaluate Company's compliance with the EC Conditions, gather relevant information if environmental damage occurs or public complaints are raised, and issue Notices of Violation (NOV) should non-compliances are observed and not corrected or if there are industrial activities or components that are not covered by the EC. Issuance of NOVs shall be as per the mandate of the ECS.

6.2 Emissions Inventory

The Emission Inventory for the Emirate of Dubai is a comprehensive and detailed estimate of air emissions of criteria pollutants, air pollutants from specific emission sources, and odorous gases. The DM-ESD has established an online emission inventory platform.

Facilities with emission sources are required to submit source descriptions, activity data and pollutant concentrations via the interactive online platform (<http://www.dubaiairenvironment.dm.gov.ae/>), in accordance with the compliance conditions of the EC. A user account to access the online platform should be requested by contacting DM-AESEAS via **Emission_Inventory@dm.gov.ae**.

The Company Owner has to ensure that the appointed laboratory involved in the monitoring is accredited by the Emirates International Accreditation Centre (EIAC), for the specific tests (https://eiac.gov.ae/directory?filter=Testing%20Laboratories&filter_status=Accredited).

For the specific roles and responsibilities of the relevant stakeholders, refer to Volume 1 Chapter 7.



Volume
4

**Guidance on the Registration of
Environmental Consultants in
the Emirate of Dubai**

Volume 4

Guidance on the Registration of Environmental Consultants in the Emirate of Dubai

The Dubai Municipality Environmental Sustainability Department (DM-ESD) recognises the role of Environmental Consultants in promoting sustainable development in the Emirate of Dubai through the facilitation of Projects' compliance with the applicable Federal and Local environmental laws and regulations. DM-ESD requires Environmental Consultants to be registered to ensure that they are licensed to perform environmental consultancy activity, suitably qualified and competent to carry out the required environmental studies, and are proficient in the environmental requirements of DM-ESD.

This Volume 4 provides guidance and describes the coverage, requirements, procedures and conditions on the registration of Environmental Consultants with DM-ESD to enable them to carry out environmental studies for Projects in Dubai. This Volume also emphasises the Environmental Consultants' accountability in all the environmental reports submitted to DM-ESD and responsibility in promoting professionalism with their Clients, fellow Environmental Consultants, and DM-ESD.

1

Coverage of Registration

The following Table 1 provides the list of the code-based environmental services (hereafter referred as Environmental Codes) on which the Environmental Consultants shall be registered to. The minimum qualification requirements for specialist per Environmental Code are also provided below.

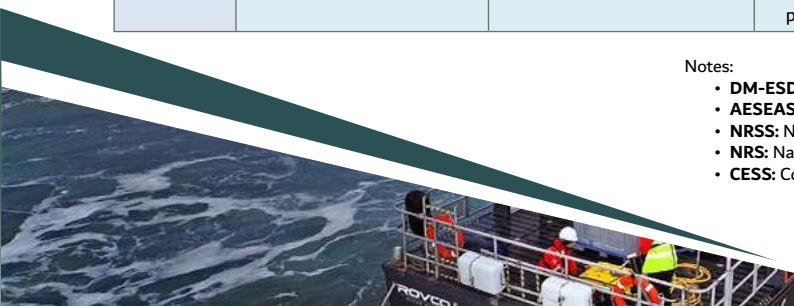
Table 1 - Description of Environmental Services and Minimum Qualification Requirements

DM-ESD	Environmental Code	Description	Minimum Qualification
AESEAS	EAS	Environmental Impact Assessment Summary (EIAS) without any Specialised Study for Development & Infrastructure Projects, and for Industrial Projects	<ul style="list-style-type: none"> With a Bachelor's degree or an equivalent in any relevant field At least five (5) years of experience in environmental impact assessment studies Should have a valid UAE employment visa, Emirates ID, and should be locally based
	A	Air Environment (Air Quality, Odour, Noise, EMF, and Climate Change) Assessment	<ul style="list-style-type: none"> With a Bachelor's degree in Engineering, Sciences, or relevant discipline At least five (5) years of relevant professional experience
	B	Air Environment Modelling	
	B1	Air and Odour Dispersion Modelling	<ul style="list-style-type: none"> With a Bachelor's Degree in Engineering, Sciences, or relevant discipline At least ten (10) years of relevant professional experience
	B2	Noise Modelling	<ul style="list-style-type: none"> With a Bachelor's Degree in Engineering, Sciences, or relevant discipline At least ten (10) years of relevant professional experience
NRSS	C	Soil and Groundwater Studies and Assessment	
	C1	Soil Studies and Assessment	<ul style="list-style-type: none"> With a Master's or PhD degree in Environmental Science or Soil Science At least ten (10) years of relevant professional experience for a specialist with a Master's degree and seven (7) years for a specialist with a PhD degree Should have at least (3) years of experience working in the United Arab Emirates in the relevant field
	C2	Groundwater Studies and Assessment	<ul style="list-style-type: none"> With a Bachelor's, Master's or PhD degree in Environmental Sciences, Applied Geology, Hydrology, Hydrogeology At least ten (10) years of relevant professional experience for a specialist with a Bachelor's degree, seven (7) years for a specialist with a Master's degree, and three (3) years for a specialist with a PhD degree Should have at least one (1) year of experience working in the MENA regions in the relevant field
	D	Hydro-geological Studies and Assessment	<ul style="list-style-type: none"> With a Bachelor's, Master's or PhD degree in Geology/Hydrogeology/Hydrology/Water Resources At least seven (7) years of relevant professional experience for a specialist with a Bachelor's degree, five (5) years for a specialist with a Master's degree, and three (3) years for a specialist with a PhD degree Should have at least one (1) year of experience working in the United Arab Emirates in the relevant field

DM-ESD	Environmental Code	Description	Minimum Qualification
NRS	E	Terrestrial and Marine Ecology Studies and Assessment	
	E1	Terrestrial Ecology Studies and Assessment	<ul style="list-style-type: none"> With a Bachelor's, Master's or PhD degree in Wildlife, or related terrestrial sciences (e.g. Zoology or Botany) At least ten (10) years of relevant professional experience for a specialist with a Bachelor's degree, seven (7) years for a specialist with a Master's degree, and three (3) years for a specialist with a PhD degree Should have at least three (3) years of experience working in the United Arab Emirates Must be locally present to lead and undertake in person the E1 related field work associated with the EIA of the proposed project.
	E2	Marine Ecology Studies and Assessment	<ul style="list-style-type: none"> With a Bachelor's, Master's or PhD degree in Biological Oceanography or related Marine Sciences (e.g. Fisheries or Coastal Zone Management) At least ten (10) years of relevant professional experience for a specialist with a Bachelor's degree, seven (7) years for a specialist with a Master's degree, and three (3) years for a specialist with a PhD degree Should have at least three (3) years of experience working in the United Arab Emirates Must be locally present to lead and undertake in person the E2 related field work associated with the EIA of the proposed project.
	F	Wildlife Translocation	<ul style="list-style-type: none"> With a Bachelor's degree in Veterinary Science and at least seven (7) years of relevant professional experience With a Master's or PhD degree in Environmental Science, Wildlife, or biological related sciences (e.g. Zoology or Botany) and at least five (5) years of relevant professional experience for a specialist with a Master's degree and three (3) years for a specialist with a PhD degree Should have at least three (3) years of experience working in the United Arab Emirates in the relevant field Must be locally present to lead and undertake in person the F related field work associated with the wildlife translocation.
	G	Marine Species Translocation	<ul style="list-style-type: none"> With a Master's or PhD degree in Marine Science, Environmental Science, or biological related sciences (e.g. Zoology or Botany) At least five (5) years of relevant professional experience for a specialist with a Master's degree and three (3) years for a specialist with a PhD degree Should have at least three (3) years of experience working in the United Arab Emirates in the relevant field Must be locally present to lead and undertake in person the G related field work associated with the marine species translocation.
CESS	H	Marine Water & Sediment Quality Studies and Assessment	<ul style="list-style-type: none"> With a Bachelor's degree in Environmental Sciences / Environmental Management / Geography / Biology or relevant discipline and at least ten (10) years of professional experience With a Master's or PhD degree in the relevant discipline and at least seven (7) years of professional experience
	I	Marine / Coastal Modelling Studies	
	I1	Hydrodynamics, Flushing, Plume, or Tracer Dispersion, Dilution Analysis	<ul style="list-style-type: none"> With a Master's degree in Science / Engineering and at least ten (10) years of hands-on experience With a PhD degree in the relevant disciplines and at least seven (7) years of professional experience
	I2	Marine Water Quality	<ul style="list-style-type: none"> With a Master's degree in Science / Engineering and at least ten (10) years of hands-on experience With a PhD degree in relevant disciplines and at least seven (7) years of professional experience
	I3	Wave Propagation & Transformation, Wave Tranquillity	<ul style="list-style-type: none"> With a Master's degree in Coastal / Ocean Engineering or equivalent and at least ten (10) years of professional experience With a PhD degree in relevant disciplines and at least seven (7) years of professional experience
	I4	Sediment Transport, Shoreline Evolution, Morphological Evolution	<ul style="list-style-type: none"> With a Master's degree in Coastal / Ocean Engineering and at least ten (10) years of professional experience With a PhD degree in relevant disciplines and at least seven (7) years of professional experience
	I5	Oil Spill Modelling	<ul style="list-style-type: none"> With a Master's degree in Science / Engineering and at least ten (10) years of hands-on experience With a PhD degree in relevant disciplines and at least seven (7) years of professional experience

Notes:

- **DM-ESD:** Dubai Municipality Environmental Sustainability Department
- **AESEAS:** Air Environment Sustainability and Environmental Assessment Section
- **NRSS:** Natural Resources Sustainability Section
- **NRS:** Natural Reserves Section
- **CESS:** Coastal Environment Sustainability Section



2 Conditions of Registration for Environmental Consultants in the Emirate of Dubai

In conjunction to the “Code of Conduct for Environmental Consultants” (provided in Chapter 4 of this Volume), the following are the Conditions of the Registration, which shall be complied by the registered Environmental Consultant or any Environmental Consultancy Company with the intention to register with DM-ESD.

2.1 General Conditions for All Environmental Consultants

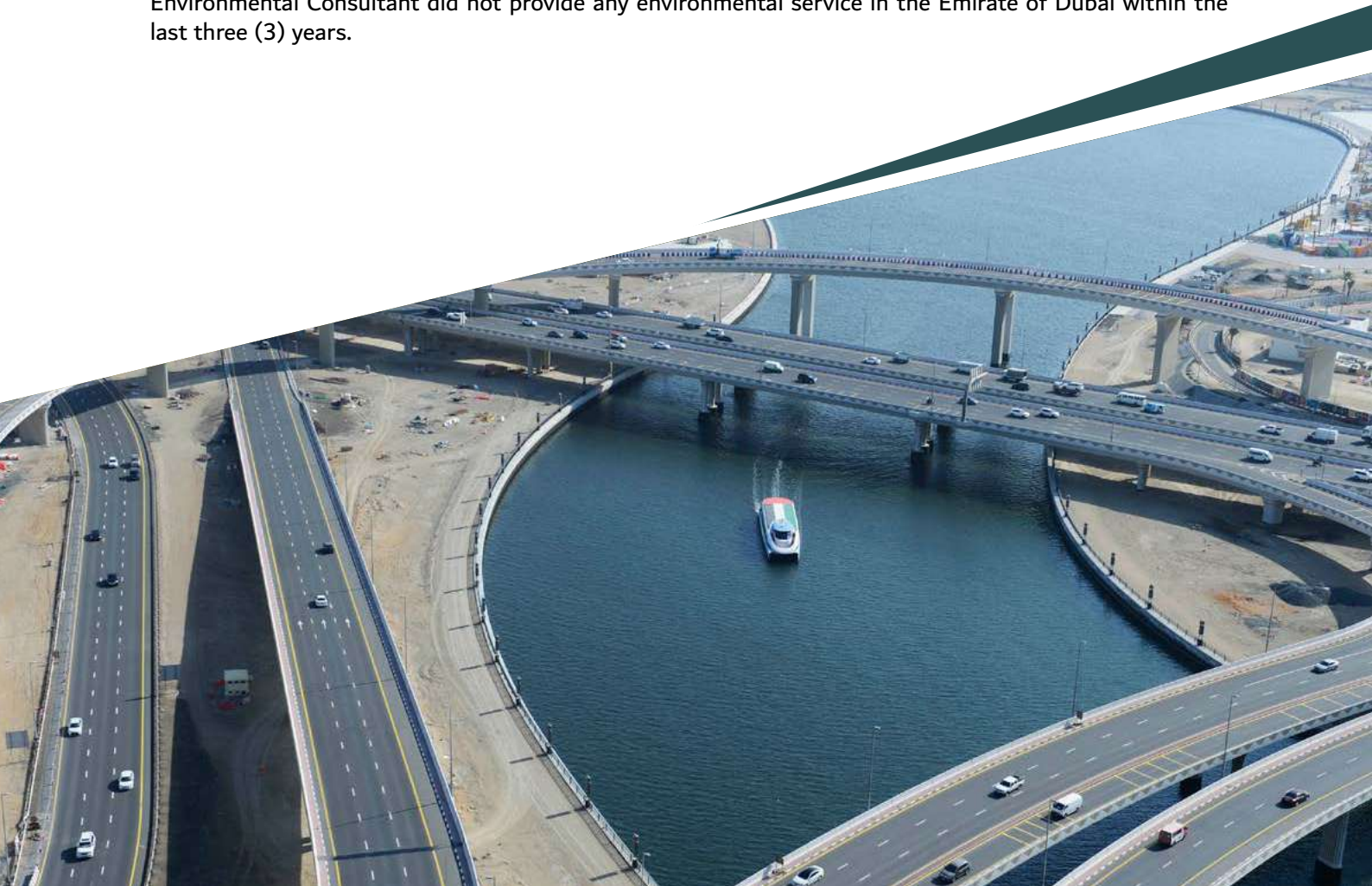
1. An environmental consultancy company who intends to register to any of the Environmental Codes shall comply with the minimum qualification requirements provided in Table 1, the minimum requirements for submission provided in Chapter 3.1, and the procedure for registration provided in Figure 1. The company shall have at least one (1) locally-based specialist who shall qualify and pass the written examination for any of the Environmental Codes.
2. An environmental consultancy company who intends to carry out an environmental impact assessment study (i.e. EIA Summary) which does not require any specialised study shall be registered with at least Environmental Code EAS.
3. Any application that does not comply with the DM-ESD’s minimum registration qualifications and requirements shall be rejected.

2.2 Specific Conditions for Registered Environmental Consultant

1. A registered Environmental Consultant shall not undertake any tasks associated with a specific Environmental Code in which the company does not have the relevant registered specialist. Furthermore, for the Ecology Codes (i.e. E1, E2, F and G), the registered specialist in possession of these Codes must be present at the project site to lead and undertake all associated EIA fieldwork, including and not limited to field surveys, monitoring, testing and translocations. Valid evidence that this condition has been met is to be provided in the EIA document. DM-ESD will not accept or review any environmental report or any section of an Environmental Impact Assessment (EIA) document prepared by Environmental Consultant who is not registered with DM-ESD or where other conditions stipulated in this Guidance have not been satisfactorily demonstrated.
2. The names with corresponding signatures of the Environmental Consultant’s registered specialists and the assigned principal technical reviewer, including the registered specialists based outside the UAE (if any), shall be declared and included in the environmental report. The signatures affixed in the report signify the accountability of the concerned specialists and technical reviewer on all information contained therein. The specialists involved in the report preparation, including the specialists based outside the UAE (if any), shall attend all technical meetings that may be required by the DM-ESD. DM-ESD reserves the right to reject any environmental report or EIA document without the names and signatures of the registered specialists involved in the preparation of the environmental report or EIA document.
3. A registered Environmental Consultant shall appoint only a sub-contractor or laboratory (i.e. for soil, groundwater, marine sediment sample collection, water quality, air quality and noise monitoring, etc.) duly accredited by the Emirates International Accreditation Centre (EIAC) to perform the specific monitoring or testing activity. DM-ESD will reject any environmental monitoring report prepared by sub-contractor or laboratory without EIAC accreditation.
4. A registered Environmental Consultant who intends to update/change the company details shall comply with the minimum requirements for submission provided in Chapter 3.3-I and the procedure for registration provided in Figure 3.
5. A registered Environmental Consultant who intends to register for a new Environmental Code or add a new specialist shall comply with the minimum qualification requirements provided in Table 1, the minimum requirements for submission provided in Chapter 3.3-I and the procedure for registration provided in Figure 1. In case the new specialist is already registered, and is transferring from another company, it

shall specifically indicate in the tabulated list of specialist the previous company of the new specialist, the Environmental Code(s) he or she was registered with the previous company, and the codes to be registered with the new company.

6. The renewal of registration shall be applied at least thirty (30) days before its expiry with the submission of updated documents (please refer to Chapter 3.2). The renewal of registration is subject to re-evaluation of the Environmental Consultant's and specialist/s' qualifications, compliance with the conditions of registration, and performance for each registered Environmental Code.
7. In an event that a registered Environmental Code cannot be undertaken as a result of the departure of the registered specialist from the company, the AESEAS shall be immediately updated and the company's registration shall be revalidated.
8. The Environmental Consultant's entire registration shall be automatically cancelled if:
 - o the Dubai license of the environmental consultancy company and / or the employment visa of the only locally-based registered specialist expires beforehand;
 - o the quality of the reports submitted to DM-ESD are repeatedly and consistently not in compliance with the DM-ESD requirements (i.e. maximum of three instances leading to an issuance of a warning letter by AESEAS).
9. The Environmental Consultant's registration for a specific Environmental Code shall be automatically cancelled if:
 - o the registered specialist/s leaves the company without an alternate or replacement who is also registered under the company for the same Environmental Code;
 - o employment visa of the registered specialist/s, based locally or outside the UAE, expires beforehand without an alternate who is also registered under the company for the same Environmental Code.
10. The Environmental Consultant's entire registration or the registration for a specific Environmental Code shall be automatically cancelled if the evaluation of registration renewal documents shows that the Environmental Consultant did not provide any environmental service in the Emirate of Dubai within the last three (3) years.



11. DM-ESD shall implement the Performance Evaluation Guideline as per the Guidance on the Environmental (EC) Clearance Requirements for Development, Infrastructure, and Industrial Projects in the Emirate of Dubai. The Specialist/s and/or the Environmental Consulting Company may be delisted if the performance evaluation requirements are not met.

3

Applications for Registration

New applications for registration and request for the amendment (i.e. addition of Environmental Code or Specialist) or renewal of an existing registration shall be submitted to the AESEAS. The Registration of Environmental Consultant Application Form (can be obtained from the AESEAS) and the compiled soft copies of the minimum requirements for submission shall be submitted to **EIA@dm.gov.ae**.

The minimum requirements and procedures for registrations are provided in the following Sections.

3.1 Minimum Requirements for the New Registration of Environmental Consultants in the Emirate of Dubai

I. Basic Requirements

- Licensed in Dubai to undertake the activity “Environmental Consultants and Studies”, or similar activity (i.e. for Dubai Freezone companies).
- Employs a specialist for the Environmental Code(s) to be applied for registration with qualifications compliant with Table 1 of this Volume. The specialist may handle maximum of two (2) Environmental Codes other than Code “EAS” provided that he or she has the relevant qualification and experience.
- Owns or leases the necessary software and/or equipment required to undertake the services under the environmental codes to be applied for registration.

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II. Required Documents

A. Properly filled Registration of Environmental Consultant Application Form

B. Company Documents

- Copy of valid Dubai Professional License with the required activity.
- Organisational structure of the licensed company, to include the names and position of its key personnel.
- Office mailing address and contact details.
- A portfolio of the environmental consultancy projects in the UAE carried out in the last five (5) years by the company and approved by DM-ESD or other relevant Authority.
- For companies registering with specialists based outside UAE:
 - o A letter from the Dubai-licensed company certifying that the specialist/s is/are employed in their international branch office;
 - o Copy of Company’s Memorandum of Association and Certificate of Incorporation or Certificate of Registration of the international branch;
 - o International company profile;
 - o International corporate organisational structure.

C. Tabulated list of Specialist/s per Environmental Code

D. Documents of the Specialists

- Copy of passport, employment visa and Emirates ID (the employment visa of the specialists shall be under the Dubai-licensed company).
- Curriculum Vitae, copy of UAE attested diplomas, transcript of school records, and relevant training certificates.

- For specialists based outside the UAE (if any):
 - o Proof of employment (i.e. certificate of employment issued by the international branch office);
 - o Copy of passport;
 - o Copy of employment visa (if applicable, for Foreign Nationals);
 - o Curriculum Vitae;
 - o Copy of diplomas, transcript of school records, and relevant training certificates.

E. Software / Equipment Documents

- Copy of software license;
- Proof of ownership (e.g. receipts of purchase) or copy of contract/lease agreement with the equipment/software owner/proprietor/lessor;
- Copy of valid calibration certificates of the equipment.

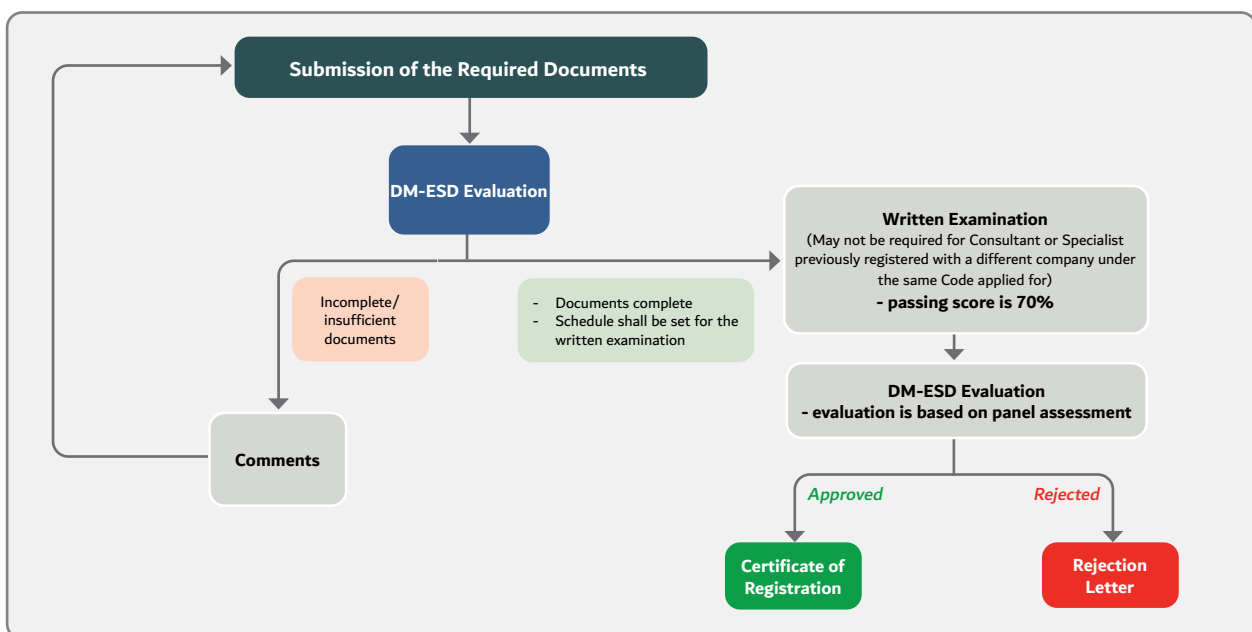


Figure 1: Procedure for the New Registration of Environmental Consultants or Registration of New or Additional Environmental Code / Specialist for Registered Environmental Consultants in the Emirate of Dubai

3.2 Minimum Requirements for the Renewal of Environmental Consultant's Registration

A. Properly filled Registration of Environmental Consultant Application Form

B. Company Documents

- Copy of updated/latest Dubai license with the required activity.
- Updated organisational structure of the licensed company, to include the names and position of its key personnel.
- Updated office mailing address, and contact details (if applicable).
- Updated portfolio of the environmental consultancy projects in the UAE carried out in the last three (3) years by the company and approved by DM-ESD or other relevant Authority. The portfolio should include Projects in Dubai.
- For companies renewing registration with specialists based outside the UAE:
 - o A letter from the Dubai licensed company certifying that the specialist/s is/are employed in their international branch office;

- o Copy of Company's Memorandum of Association and Certificate of Incorporation or Certificate of Registration of the international branch;
- o Updated international company profile;
- o Updated international corporate organisational structure.

C. Tabulated list of Specialist/s per Environmental Code

D. Documents of the Specialists

- Copy of latest valid passport, employment visa and Emirates ID (the employment visa of the specialists shall be under the Dubai licensed company).
- Updated curriculum Vitae, copy of updated relevant training certificates (i.e. required to be UAE attested if issued outside the country).
- For specialists based outside the UAE (if any):
 - o Proof of employment (i.e. updated certificate of employment issued by the international branch office);
 - o Copy of latest valid passport;
 - o Copy of updated employment visa (if applicable, for Foreign Nationals);
 - o Updated Curriculum Vitae;
 - o Copy of updated relevant training certificates.

E. Software / Equipment Documents

- Copy of latest/updated software license;
- Proof of ownership (e.g. receipts of purchase) or copy of latest/updated contract/lease agreement with the equipment/software owner/proprietor/lessor;
- Copy of valid calibration certificates of the equipment.

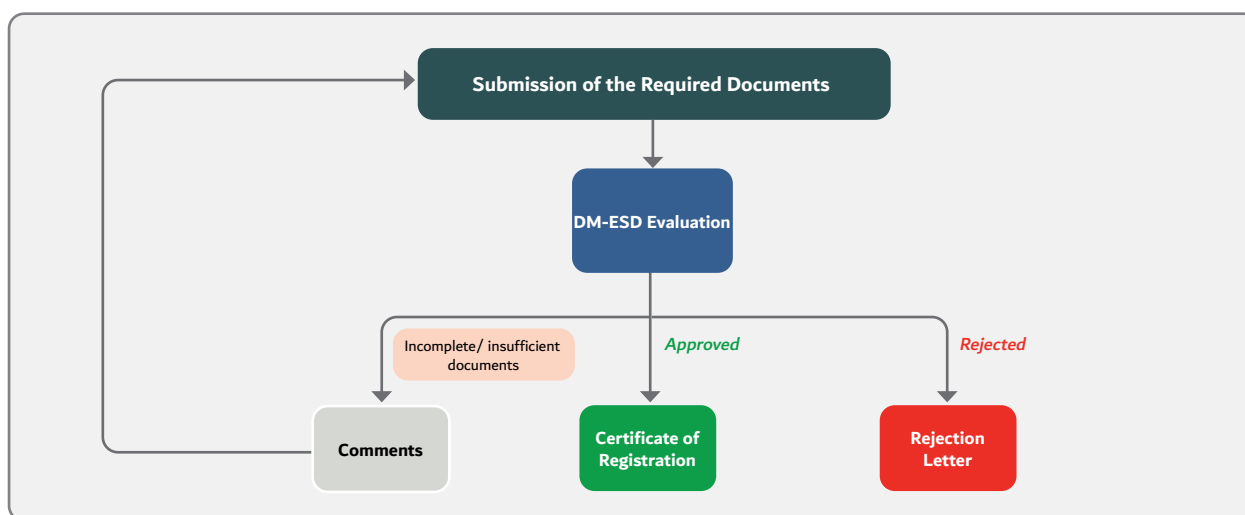


Figure 2: Procedure for the Renewal of Environmental Consultant's Registration

3.3 Minimum Requirements for the Amendment of Environmental Consultant's Registration

A. Properly filled Registration of Environmental Consultant Application Form

I. Change in Company Details

B. Company Documents

- Copy of valid Dubai Professional License with the required activity.
- Organisational structure of the licensed company, to include the names and position of its key personnel.
- Office mailing address and contact details.
- For companies registering with specialists based outside UAE:
 - Copy of Company's Memorandum of Association and Certificate of Incorporation or Certificate of Registration of the international branch;
 - International company profile;
 - International corporate organisational structure.

Note: After AESEAS' evaluation, the company details will be updated in the database of Registered Environmental Consultants in the Emirate of Dubai.

II. New or Additional Environmental Code / Specialist

B. Tabulated list of Specialist/s per Environmental Code

C. Documents of the Specialists

- Copy of passport, employment visa and Emirates ID (the employment visa of the specialists shall be under the Dubai licensed company).
- Curriculum Vitae, copy of UAE attested diplomas, transcript of school records, and relevant training certificates.
- For specialists based outside UAE (if any):
 - Proof of employment (i.e. certificate of employment issued by the international branch office);
 - Copy of passport;
 - Copy of employment visa (if applicable, for Foreign Nationals);
 - Curriculum Vitae;
 - Copy of diplomas, transcript of school records, and relevant training certificates.

D. Software / Equipment Documents

- Copy of software license;
- Proof of ownership (e.g. receipts of purchase) or copy of contract/lease agreement with the equipment/software owner/proprietor/lessor;
- Copy of valid calibration certificates of the equipment.

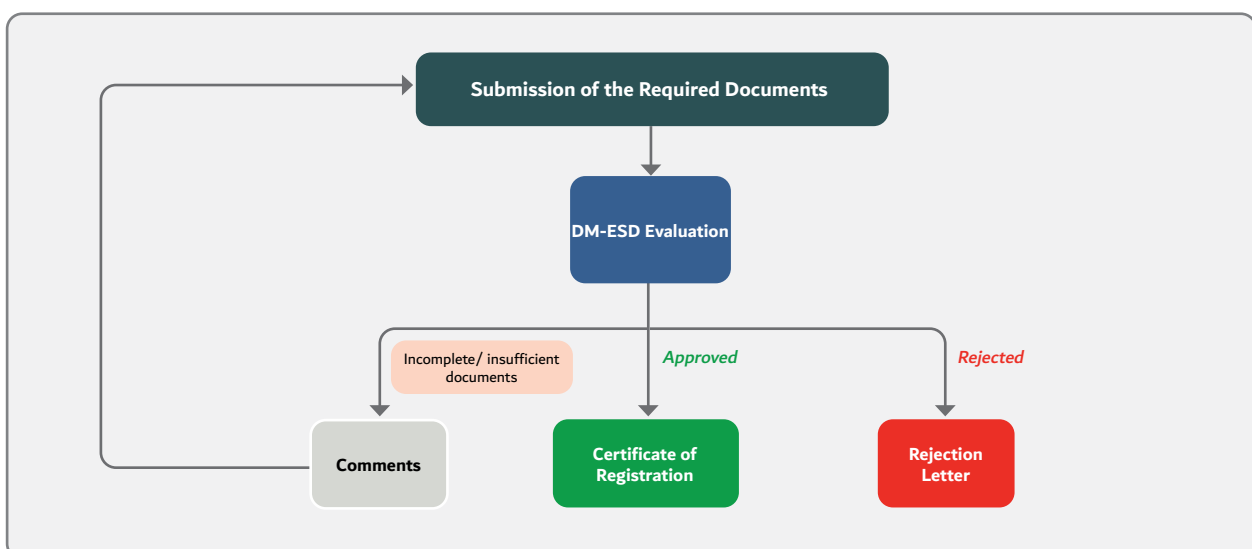


Figure 3: Procedure for the Request for Change in Company Details

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Code of Conduct for Environmental Consultants

All Registered Environmental Consultants are obliged to maintain and improve the reputation of the consultancy profession by rigorously observing this Code of Conduct. Failure to do so shall result in the reevaluation of Environmental Consultant's registration with the Dubai Municipality Environmental Sustainability Department (DM-ESD).

Upon registration, the Environmental Consultant agrees and shall adhere, but not be limited, to the following set of responsibilities:

1. To act professionally and in unbiased manner, and to not undertake any study that the Environmental Consultant is not registered for or competent to perform;
2. To provide the agreed environmental services to the Project Owner or its appointed representative, and comply with the environmental requirements of DM-ESD with the highest level of professionalism;
3. To be truthful, accurate and fair to the assigned work, without any fear or favor, while striving to increase the competence and prestige of the environmental impact assessment profession;
4. To judiciously use the information required by DM-ESD or acquired from the Project Owner or its appointed representative, independently and without prejudice, in the development and preparation of the Environmental Impact Assessment (EIA) document and any relevant environmental reports, and maintain the confidentiality of information as required;
5. To not intentionally communicate false or misleading information that may compromise the integrity of any EIA study;
6. To not accept any favor from the Project Owner or its appointed representative and avoid any conflict of interest that may affect the environmental services to be carried out;
7. To not act in a manner detrimental to the reputation of any of the stakeholders, Project Owner or its appointed representative and DM-ESD; and
8. To cooperate fully in any clarification procedure (e.g. official letter, request for meeting, etc.) as may be raised by DM-ESD.

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All registered Environmental Consultants should be fully aware of the requirements as per the Guidance on the Environmental Clearance (EC) Requirements for Development, Infrastructure and Industrial Projects in the Emirate of Dubai, and are encouraged to regularly check the DM website to ensure reference is made on the latest version of the Guidance, which is periodically updated in the DM Website and the relevant Environmental Service Catalogs.



5

Registered Environmental Consultant Performance Evaluation Guideline

5.1. Purpose

This Guideline provides the information necessary for the review and evaluation of the performance of a Dubai Municipality Environmental Sustainability Department (DM-ESD)-Registered Environmental Consultants in terms of the document submission quality and conformance with the stipulations of the Guidance on the Environmental Clearance (EC) Requirements for Development, Infrastructure, and Industrial Project in the Emirate of Dubai, the technical quality of the submitted environmental impact assessment (EIA) and the relevant specialized environmental studies required to obtain an EC, and the compliance with the Conditions of Registration and the Code of Conduct for Environmental Consultants.

5.2. Overview of the Performance Evaluation

5.2.1. Performance Evaluation Goal

The goal of the Performance Evaluation of registered Environmental Consultants is to enhance the quality of the environmental studies submitted to DM-ESD in order to streamline the Department's review and approval process, especially the EC-related applications.

5.2.2. Performance Evaluation Objectives

The objectives of the Performance Evaluation are the following:

- characterize the performance of and provide formal feedback to registered Environmental Consultants through a uniform rating system that will measure a specialist's conformance with the Dubai EIA or EC application process, the stipulated procedures, standards, and conditions as per the Guidance on the EC Requirements for Development, Infrastructure, and Industrial Project in the Emirate of Dubai, and all the applicable environmental laws and regulations;
- instill accountability to Environmental Consultants in order to maintain an excellent registration status with DM-ESD and uphold the reputation of the environmental consultancy profession in the Emirate of Dubai;
- inform DM-ESD in a timely and proactive manner of the evaluation results of each review conducted to sustain and improve the management of registered Environmental Consultants in the Emirate of Dubai.
- enhance the quality of the environmental studies submitted to DM-ESD through credible assessments and sound recommendations, and further improve the consistency of submissions, in order to support the decisions of the Department;
- streamline the DM-ESD review and approval process as a result of the improved performance of and quality of submissions from the registered Environmental Consultants.

5.2.3. Performance Evaluation Process

As part of the Department's review process, each of the specialists' performance is evaluated per EC application to DM-ESD for compliance with each of the following Main Performance Evaluation Criteria:

1. Submission Quality of the EIA Document

Was the submission, including the required supporting document / additional study / comments resolution sheet (CRS), complete and in compliance with the EIA submission requirements based on the Guidance on the Environmental Clearance (EC) Requirements for Development, Infrastructure and Industrial Projects in the Emirate of Dubai? Was the EIA document compliant with the Guidance in contents and structure? Did the EIA document provide correct cross-referencing between main text and its annexes? Were the figures, photos, maps, graphs, text and tables, as applicable, clear, detailed, to-scale and properly referenced? Was the "Checklist for the Environmental Consultant in Preparation for the Submission of the EIA Document" included, properly accomplished, signed and stamped? Were the specialist's name/s and signature/s affixed in the EIA document?

2. Technical Quality of the EIA Document

Was the EIA document clearly presented and understandable by DM-ESD as decision-makers? Was the necessary information, reflecting the project characteristics and its financing (where relevant) is provided and is comprehensive, correct, and consistently presented throughout the EIA Document, as per Guidance on the Environmental Clearance (EC) Requirements for Development, Infrastructure, and Industrial Projects in the Emirate of Dubai, and with working hyperlinks to report sections, figures, and tables? Were the relevant and up-to-date/latest environmental standards, guidelines, criteria, UAE Federal/Emirate of Dubai Legislation/Regulations, Regional/International Conventions reflecting the nature and location of the project and/or its financing, presented and referred? Were the main components of the project, its location and boundaries, and the sensitive receptors that will be affected by the Project, clearly defined? Were the environmental surveys properly executed and/or were the baseline conditions properly established? Was comprehensive gap analysis undertaken and was the available data used in the impact assessment acceptable, well-presented, and justified in the impacts assessment process? Were the laboratory analytical methodologies, detection limits, data validation methods and quality assurance/quality control methods used/applied acceptable? Were all emissions to land, air and water, as applicable, identified and quantified, where possible? Were appropriate numerical models and EIA prediction tools used and executed correctly, as per the Guidance? Was a cumulative impact assessment undertaken that properly assessed the potential cumulative impacts of the proposed project and any other relevant projects and existing operations/uses in the area? Were all significant environmental aspects and impacts identified and properly assessed? Were the pathways of impact and Zone of Influence of the project clearly identified? Were the proposed mitigation measures and management plans sufficient and scientifically justifiable? Was the significance of any residual impacts adequately assessed after the mitigation measures were applied? Were the monitoring and management plan roles and responsibilities clearly defined and provided? Were the Environmental Management Plan and Monitoring Program relevant to, consistent with, and cover all the assessed significant residual environmental impacts?

3. Environmental Consultant's practical knowledge of and experience in the relevant field and compliance with the Conditions of Registration and the Code of Conduct for Environmental Consultants

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Did the specialist of the registered Environmental Consultant demonstrate technical and practical knowledge and professional experience in the registered areas of expertise (i.e. Environmental Codes)? Were gaps apparent in the specialist's knowledge or did the specialist lack experience in one or more areas? Did the consultant demonstrate a professional understanding of the problems that arose? Did the Environmental Consultant work within DM-ESD's normal procedures and comply with the requirements as per the relevant laws and regulations in Dubai? Did the Environmental Consultant cooperate and comply fully with all clarification procedures (e.g. addressing online comments, addressing all technical comments through the CRS, facilitating request for meeting, etc.) as required by DM-ESD, with the highest level of professionalism?

5.2.4. Performance Categories and Rating Scale

A three-point rating scale has been established – “1” for Unsatisfactory performance, “2” for Satisfactory, and “3” for Good. The evaluator is to provide the mark in “Column N” (marked with an arrow) with what best describes how the submission met the specific Performance Criterion requirement. No point is received when “Column M” is marked “N/A”, meaning that the performance criterion is considered Not Applicable for that particular submission.

The Performance Criteria are equally weighted. The Total Rating will be based on the 70% passing or satisfactory. A counter for each mark is incorporated in the formula to calculate the Total Rating (e.g. if 70% of the criteria is marked “Good”, then the Total Rating will be “Good” considering that no criterion is marked “Unsatisfactory”; if less than or equal to 30% of the criteria is marked “Unsatisfactory” and the rest is “Good” or “Satisfactory”, then the Total Rating will be “Satisfactory”). Should the rating given is “Unsatisfactory”, the evaluator is required to provide justification in the “Comment” column. This information shall substantiate the rating.

The “Remarks and Recommendations” section must be used by the evaluator to explain the overall performance rating including the problems or errors that were encountered in the submission which are the bases of the

rating and to indicate the recommendation to AESEAS regarding the necessary action.

The following General Rating Guidance shall be followed:

- Only one Performance Evaluation Form is to be used for each application (i.e. multiple specialists may require multiple tabs in one Performance Evaluation Form). Only one evaluation per specialist per application is to be carried out, which is right after the decision of the respective DM-ESD Sections for the application has been finalized in the online EC application system.
- The ratings given must be justifiable and the remarks or comments should be supported by adequate documentation or evidence.
- The evaluator should complete and immediately submit the Performance Evaluation Form together with the FINAL technical review feedback on the EPBI application through the comments section of the online system to the respective Section's application approver, within the assigned internal review timeframe.
- The final evaluation scores will be provided by the AESEAS application manager to the Environmental Consultant after the completion of the EPBI technical review cycle for that application, after discussion with and concurrence by the AESEAS Manager, by email (via EIA@dm.gov.ae) within five (5) working days the review feedback of application decision has been posted or issued through the online system.
- A scheduled date and time for a meeting may (i.e. optional) accompany the evaluation provided to the Environmental Consultant. Environmental Consultants may be allowed a fifteen (15)-minute meeting with no more than 2 (two) representatives from their company to discuss evaluation scores.
- After the evaluation meeting, if the Environmental Consultants disagree with the evaluation, an appeal can be requested.
- The completed evaluation forms should be retained in the project file for at least twelve (12) months (i.e. one complete registration validity/cycle).

5.2.5. Use of the Performance Evaluation Data

The primary uses of the registered Environmental Consultant Performance Evaluation data are to:

- monitor the changes in the quality of work produced by DM-ESD-registered Environmental Consultants;
- provide the DM-ESD-registered Environmental Consultants with timely information about the deficiencies attributed to the work produced or service delivered by their specialist as demonstrated in the submission to DM-ESD;
- assist DM-ESD technical team in the decision-making concerned with the registration of Environmental Consultants, and the EIA, any EC-related application or environmental submission reviews for development, infrastructure, and industrial projects in Dubai.
- be the basis for the following DM-ESD actions:
 - o recognising the Top Performing Environmental Consultants;
 - o not renewing the registration of a specialist or of an Environmental Consulting company;
 - o restricting or limiting the scope of an Environmental Consulting company;
 - o removal of a specialist or an Environmental Consulting company from the DM-ESD list; or
 - o excluding a specialist or an Environmental Consulting company to register with DM-ESD.

Based on the ratings (please refer to the "Performance Categories and Rating Scale" section) for each of the Specialists per Environmental Code:

- **GOLDEN STAR:** Three (3) consecutive "Good" ratings shall be the basis of DM-ESD to mark the specific Environmental Code of an Environmental Consulting company with a "Golden Star" icon (★) in the List of Registered Environmental Consultants, being one of the Top Performing Professionals in the specific field of environmental consultancy and studies.
- **SPECIALIST-SPECIFIC RATING:** Three (3) consecutive "Unsatisfactory" ratings, and/or three (3) "Unsatisfactory" ratings within one (1) year (i.e. validity of registration) shall be the basis of DM-ESD to delist the specialist or not renew his or her registration for a specific Environmental Code. The specialist may apply again to register for that specific Environmental Code after one (1) year from the date of the

notification from AESEAS regarding the specialist's delisting, subject to a reevaluation (e.g. examination).

- **ENVIRONMENTAL CODE-SPECIFIC RATING:** Three (3) consecutive "Unsatisfactory" ratings, and/or three (3) "Unsatisfactory" ratings within one (1) year (i.e. validity of registration) for a specific Environmental Code, regardless of the responsible specialist, shall be the basis of DM-ESD to remove the specific Environmental Code even if there are still other specialists registered for that Code. The Environmental Consulting Company may apply again to register for the delisted Environmental Code after one (1) year from the date of the notification from AESEAS regarding the Environmental Code's delisting, subject to the reevaluation of ALL the specialists nominated for that Code (e.g. examination).
- **OVERALL RATING:** The overall rating for the Environmental Consulting Company shall also be calculated. The overall ratings are the following: "Good" (85% and above); "Satisfactory" (70% to 84.99%); "Unsatisfactory" (<70%). Three (3) consecutive "Unsatisfactory" ratings, and/or three (3) "Unsatisfactory" ratings within one (1) year (i.e. validity of registration) shall be the basis of DM-ESD to delist the Environmental Consulting Company. The Environmental Consulting Company may apply again to register after one (1) year from the date of the notification from AESEAS regarding the company's delisting, subject to the reevaluation of ALL the specialists nominated for the Environmental Code/s (e.g. examination).

5.2.6. Use of the Performance Evaluation Form

The Air Environment Sustainability and Environmental Assessment Section (AESEAS) will lead and must actively manage the performance evaluation process within the parameters of this Guideline to best achieve an effective and efficient standard for utilizing this performance management tool for registered Environmental Consultants. Each DM-ESD Section involved in the registration evaluation, namely the Natural Resources Sustainability Section (NRSS), the Natural Reserves Section (NRS), and the Coastal Environment Sustainability Section (CESS), is responsible for entering the performance evaluations for their respective Environmental Codes. The evaluator will input in the appropriate box the name of the specialist who is being evaluated, the Environmental Code relevant to the submission/application, the name of the registered Environmental Consulting Company where the specialist is employed, and the details of the environmental document submission for the specific EC application. All efforts and evaluation feedback and decisions should be coordinated with the AESEAS.

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5.2.7. Appeal Process

In an event that the Environmental Consultant disagrees with the performance evaluation rating, an opportunity for an appeal shall be followed. Within fifteen (15) working days after the evaluation meeting, an appeal may be made in writing via email (to be sent to EIA@dm.gov.ae) and must provide a detailed argument and documentation justifying reconsideration of the evaluation scoring. After the DM-ESD internal deliberation, the final response will be sent by the AESEAS by email to the Environmental Consultant within ten (10) working days from the date of receipt of the response from the internal evaluator. All decisions made by DM after the consideration of the appeal are final. This performance evaluation appeal procedure is to be strictly followed; otherwise, the appeal will be deemed not acceptable and will not be processed.

5.3. References

- <https://www.adb.org/sites/default/files/business-guide/527796/performance-evaluation-individual-consultant.doc>
- <https://coastadapt.com.au/tools/template-4-evaluating-consultants-performance>
- https://austintexas.gov/sites/default/files/files/Performance_Evaluation_Scoring_Guidelines_-_CONSULTANT.pdf
- <https://www.columbus.gov/publicservice/design-and-construction/consultant-performance-evaluation/>
- <https://open.alberta.ca/dataset/986656cc-c4c7-48e1-9672-574d99139266/resource/199a8ff5-7684-4c33-9f37-d456d7d3f200/download/sh-vendor-performance-management-program-consultant-evaluation-form-2020.pdf>
- <https://www.sandiego.gov/sites/default/files/ar2575-performance-evaluation-form.pdf>
- <https://www.codot.gov/about/forms/cdot0313.pdf>



**ANNEXURES FOR
DEVELOPMENT AND
INFRASTRUCTURE PROJECTS**

Annex 1

Project Screening Checklist for Development and Infrastructure Projects

Project Screening Checklist for Development and Infrastructure Projects

(For Projects Not Listed in Volume 2 Chapter 1)

Project Information			
Project Name			
Location			
Project Owner			
Name of Environmental Consultant (if any)			
Name of Sub-contracted Environmental Consultant (if any)			
Brief Project Description and Surrounding Land Uses			
Screening Criteria			Yes / No / [-] if not known
1. Is the Project location:			
a. within or next to an inland waterbody?			
b. within or next to the Creek?			
c. on the coast?			
d. offshore?			
2. If the Project is within, next to or near an inland water body, is the waterbody connected to the sea or to the Creek?			
3. Is the Project location near any designated protected area or conservation area as per the Department of Urban Studies and Planning or Federal or Local Laws?			
4. Is the Project within, next to or near any of the following areas which can be affected by the Project:			
a. areas already receiving discharges of similar nature?			
b. an area used by protected, important or sensitive species of plants (e.g. Ghaf tree) or animals (e.g. Arabian Tahr, turtles)?			
c. an area with important natural resources (aquifers, shallow water table, fish reefs) or features (wadi)?			
d. an area with archaeological or cultural heritage assets?			
e. areas subjected to subsidence, flooding, or erosion?			
f. area(s) with development plans (if so, identify by name and describe nature of development)?			
g. areas of high landscape / seascape value and tourism importance?			
5. Is the Project location an undeveloped area and will there be loss of vegetation (e.g. trees, plants) or displacement of animals?			
6. Is the Project location previously developed and will there be any demolition of existing facilities?			
7. Is the Project located in or near densely populated or built-up area?			
8. Is the Project location near any area occupied by sensitive land uses such as hospitals, schools, recreation, tourism, or community facilities?			
9. Is the Project located near or adjacent to another Emirate?			
10. Will construction or operation of the Project involve physical changes in the area (such as topography, land use, change in waterbodies, etc.)?			
11. Will the construction or operation of the Project involve the use of natural resources such as groundwater or marine water?			
12. Will the construction or operation of the Project cause significant noise and vibration or generation of air emissions which may lead to complaints from the public?			
13. Will the Project release light, heat energy, chemicals, recycled water or groundwater?			
Project Owner Authorised Representative			
Name			
Designation			
Signature			
Date			
Screening Decision (For AESEAS Use Only)			
<input type="checkbox"/> EIA Report	<input type="checkbox"/> EIA Summary	<input type="checkbox"/> EIA Not Required	<input type="checkbox"/> Additional Information Required
Name		Remarks	
Signature			
Date			
Classification: SHARED – CONFIDENTIAL			

Annex 2

Contents/Outline of an Environmental
Impact Assessment Report (EIAR)

Contents/Outline of an Environmental Impact Assessment Report (EIAR)

INTRODUCTION

The EIAR serves as a statement of commitment by the Project Owner on his obligations to comply with its recommendations and with Federal Legislation requirements on environmental protection. The EIAR is also a binding environmental protection agreement between a Project Owner and Dubai Municipality-Environmental Sustainability Department (DM-ESD), which is the Competent Authority for the implementation of Federal Legislation, Local Legislation and Regulations and International Conventions in the Emirate of Dubai.

Purpose and Structure

The purpose of Annex 2 “EIAR Outline and Contents” is to provide guidance on the structure and contents of the report on a quantitative Environmental Impact Assessment study, i.e. the Environmental Impact Assessment Report (EIAR), for Development and Infrastructure Projects. This guidance is provided as PART 1 of this Annex. PART 2 entails the checklist, which needs to be completed by the Environmental Consultant in preparation for the submission of the EIAR to AESEAS.

Annex 4 provides guidance on the scope of the necessary environmental baseline surveys and numerical modelling requirements (e.g. scope of numerical model simulations for Projects, which are subject to quantitative impact assessment).

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The structure of this guidance reflects, in most parts, the structure of an EIAR. Guidance on the contents of each EIAR chapter and its sections is also provided in Part 1.

PART 1 – GUIDANCE ON THE CONTENTS OF EIA REPORT

Guidance on the contents of EIAR is provided below:

EIAR COVER PAGE AND CONTENTS LIST

The EIAR text shall be preceded by:

- (i) Cover/Title Page
- (ii) QA sheet with date of issue, revision number, name of author, reviewer and approver
- (iii) Table of Contents with links to each heading and sub-heading
- (iv) List of Abbreviations
- (v) List of Tables
- (vi) List of Figures
- (vii) List of Engineering Plans / Maps
- (viii) List of Annexes

EXECUTIVE SUMMARY

The Executive Summary (ES) shall summarise in a non-technical language, the significant findings, conclusions and recommendations of the EIA study and described in detail in the EIAR. The ES shall include:

- A brief description of the proposed Project, any alternatives considered and the justification for the need for the preferred option.

- The conclusion of the scoping out exercise that identified the environmental resources that were Scoped In and further studied in the EIAR or Scoped Out .
- Concise details of the environmental baseline survey and characterisation of the Scoped In, and hence studied, environmental resources.
- Summary of the Project characteristics constituting the sources of significant changes in the existing environment leading to significant impacts.
- Description of significant impacts and measures to prevent, mitigate or compensate for them (in that order).
- List of the environmental resources, which will need monitoring to verify the effectiveness of the selected measures.
- Recommendation for resolving any (where applicable) environmental conflicts of interest.
- A brief account of the identified compensation measures (where applicable).

1. CHAPTER ON INTRODUCTION

The Introduction shall comprise:

- General Project Description
- Statement of Need for the Project
- Project Alternatives and Preferred Option
- Information on External Project Funding (where applicable)

General Project Description

This Section shall provide a general description of the proposed Project, including information on the nature, size and location of the Project, its processes, products, services as appropriate, and the land/water uses of the surrounding areas. This information shall be supported by:

- Project Affection Plan and up-to-date Master Plan/Design;
- Clear, to scale and informative maps and figures showing the Project location and its immediate surroundings.

Statement of Need for Project

This Section shall give a clear statement on why the Project is needed, its compatibility with the Federal and Emirate development strategies, programmes and plans. It shall present the long term social and economic benefits to the Emirate and society on the whole, which call for an overriding public interest when significant adverse negative impacts with little potential for prevention and/or mitigation are predicted.

Project Alternatives and Preferred Option

This Section shall clearly state the Project alternatives (e.g. nature, location, size) or individual elements of the Project (i.e. design, processes), which were considered in order to identify the preferred alternative option, and link this with the justification for its Statement of Need. The likely significant impacts and feasible prevention / mitigation / compensation measures for each identified Project alternative shall be presented, as shall the reasoning for eliminating each option.

The “Do-Nothing” Option

The “Do-Nothing” option (i.e. no proposed development at the proposed location or elsewhere) and its long term social, economic and environmental consequences shall also be briefly discussed.

2. CHAPTER ON LEGAL FRAMEWORK AND STANDARDS

This Chapter shall list the expected parameters in emissions and discharges from the planned activities/operations of the proposed Project, and accordingly shall clearly identify all Environmental Legislation and Regulations, in the UAE Federal and Dubai Emirate Levels, which the proposed Project is subject to and must comply with for the purposes of demonstrating environmental protection.

This Chapter shall also list all the Regional and International Conventions (obligations) for environmental protection, which the UAE has or is in the process of ratifying. Where the latter is the case, the timetable of ratification shall be identified in relation to the Project status and schedule.

3. CHAPTER ON THE EIA PROJECT TEAM

This Chapter shall provide information on:

- The DM-ESD-registered environmental consultancy firm undertaking the quantitative EIA study;
- The EIA Project Team Leader and team members, by name; their respective field of expertise, and the corresponding module or area of study assigned to each (“key deliverable”);
- The name(s) of DM-ESD-registered sub-consultant(s), the scope of their works in the EIA study (e.g. numerical model simulations, environmental baseline surveys), proven experience, and DM-accreditation details;
- The name of the EIAC-accredited laboratories that are commissioned for collection and analyses of environmental samples during the baseline surveys with accreditation details.

4. CHAPTER ON THE DETAILED DESCRIPTION OF THE PROJECT AND PROJECT SITE

This Chapter shall clearly present all the available information on the proposed Project and its location, with as much detail as possible, provided on GIS maps (where relevant), on the following elements of the proposed Project:

- The proposed Project’s location, delineation of Project boundaries, and planning status shall be explained; copy of Affection Plan and Master Plan/Design to be included.
- Description of the nature of the proposed Project (e.g. residential, commercial, mixed, industrial, etc.).
- The size (spatial coverage) of the proposed Project, in relation to the surrounding developments/land uses shall be given.
- Description of the nature of the existing land use(s) and expected changes at the location of the proposed Project, including the characterisation of a site being a brownfield site (previously developed) or a greenfield site (no previous development).
- The proposed Project’s immediate surroundings and its proximity to sensitive land uses or areas of environmental importance and protection status within the Emirate of Dubai shall be identified; this information shall be supported by high quality, clear and informative maps (to scale), figures and photos.
- For proposed Projects that are adjacent or very close to the borders of the Emirate of Dubai, information on land use(s) across the borders shall be provided.
- The phases of Project development and construction, supported by a Project works schedule shall be explained; the footprint of the construction works shall be clearly provided.
- A detailed description of major construction works, such as deep excavations, temporary dewatering, dredging, reclamation, land excavation and anticipated volumes of earth material associated with such works shall be given; available or most probable Method Statements shall be included in this Chapter.

- The proposed Project layout showing:
 - o The major utilities and infrastructure (e.g. permanent artificial water bodies, roads, bridges within the footprint of the proposed Project);
 - o The locations of air emissions sources and effluent discharge outfalls;
 - o The water intake and outfall points, if applicable.
- Description of the services, technologies, products, waste stream associated with the construction and operational phases of the proposed Project, including site clearance prior to construction (where relevant).
- (Where applicable) A comprehensive description of the Project operational processes, process flowchart, types and quantities of raw materials, production capacity, energy and water requirements, material balance, and water balance shall be provided.
- The information pertaining to waste streams (air, water, hazardous waste, solid waste, soil), shall be provided
- The anticipated major sources of air, soil and water contamination or disturbance to wildlife (e.g. noise and light) and built environment (i.e. existing buildings, infrastructure) shall be identified and described in detail.
- Description of the existing legitimate uses by natives, residents and tourists at the proposed Project area and its surrounding areas.
- The manpower requirements (i.e. estimated number of labour force, labour camp on the Project site, where relevant).
- Total capital cost.
- (Where applicable) If the proposed Project is externally funded, the name of the funding organisation(s) (e.g. World Bank/IFC), and any environmental protection requirements of the funding organisation, in addition to these guidelines, which the EIA study needs to comply with shall be explained.

5. CHAPTER ON THE EIA STUDY PROCESS

Scoping In and Out of Environmental Resources

This Section shall provide a description of the Scoping In and Out exercise. The purpose of this exercise is to identify which environmental resources are not within the Project site, in its immediate surroundings nor, for very obvious reasons, are likely to be impacted upon as a result of the proposed Project. Any environmental resources that falls in this category shall be Scoped Out of the quantitative environmental impact study. This exercise shall also include trans-boundary environmental resources.

The conclusion on Scoping Out an environmental resource needs to be fully justified. Any environmental resource that is not listed as Scoped Out is, therefore, identified as a Scoped In resource and it shall be studied in the quantitative EIA.

Where there is no obvious reason to justify Scoping Out an environmental resource, this resource shall be subject to the quantitative EIA study.

The environmental resources to be subject to the Scoped In and Out exercise for the purposes of a quantitative EIA study are as follows:

Geology, Hydro-geology, Geomorphology
Oceanography, Hydrodynamic Regime, Coastal Processes
Climatic Conditions, Climate Change and Air Quality
Noise and Vibration
Land Uses, Soil and Groundwater

Water Uses, Water and Sediment Quality
Aquatic Ecology and Nature Conservation
Terrestrial Ecology and Nature Conservation
Archaeology and Cultural Heritage
Amenities, Tourism and Recreation
Utilities and Infrastructure
Waste Generation and Management
Sustainability
Other Environmental Resources/Assets/Issues

Environmental Resources Data Collection and Gap Analysis

This Section shall give a brief description of the type of sources, which were sought after in order to obtain data on the Scoped In environmental resources; such sources can include:

- Review of existing data and pertinent publications
- New and complementary environmental baseline survey
- Observations, sightings, and photographs
- Consultation findings
- Anecdotal evidence

Review of Existing Data

The review of the available environmental data and the identification of gaps in data is primarily a desk-top study. This Section of the EIAR shall clearly identify the available data that was included in the description of the Scoped In environmental resources and the impacts prediction exercises (i.e. numerical model simulations). Available environmental data can be referred to by title of publication, name(s) of author(s), date, and source of publication.

The validity of and confidence level on existing data for the purposes of the quantitative impacts prediction shall need to be clearly stated in this Section. Data that is older than 5 years shall not be deemed valid for the EIA study. The available relevant data that is 5 years old or less may be accepted provided that the data is still representative of the current site condition, there are no obvious environmental contamination within the project plot, and no significant change in the land-use within the vicinity is observed. Justification as to why it is assumed to be representative data should be provided.

Where maps, drawings and photographs from available data are to be used in the EIA study, these shall be included and shall be of good quality and easy to read.

Gap Analysis

Gaps in available data, which prevent a comprehensive description of the Scoped In environmental resources thus jeopardising the integrity and confidence level of the quantitative EIA study and its conclusions, shall be identified and described in this Section.

New and Complementary Environmental Baseline Surveys

Where no data or partial data exists on Scoped In environmental resources, new or Complementary Environmental Baseline Surveys to fill in significant gaps in available data shall be fully identified in this Section of the EIAR. The findings of the complementary surveys will complement available data for the purposes of providing a comprehensive description of the Scoped In environmental resources.

The approach to and methodologies for the baseline surveys shall be briefly described in the Chapter on the EIA Study Process; the survey data and its interpretation shall be presented in the Chapter on the Existing Environment, Impacts, Mitigation, Residual Impacts as part of the comprehensive description of each Scoped In environmental resource.

The detailed description of the scope and results of the all baseline surveys shall be included in the EIA study as Technical Appendices.

The name(s) of the field survey team(s) and the EIAC-accredited laboratory shall be provided.

Field surveys and laboratory analytical specifications shall be explained clearly and in detail in the Chapter on the EIA Study Process; the specifications for both field surveys and laboratory analyses shall be complete in order to achieve the dual role of:

- Facilitating a comparison with the requirements of the Local Order No. 61 of 1991 on the Environment Protection Regulations in the Emirate of Dubai, its Rules of Implementation.
- Enabling a comprehensive and detailed quantitative impacts prediction and evaluation.

The information on the baseline surveys shall include:

- Location of the survey area, spatial coverage, number of sampling stations; this information shall be supported by:
 - o Clear, easy to read and to scale maps;
 - o Justification on good representation of environmental resource and fulfilment of identified data gaps.
- Character of survey (e.g. one off or seasonal); the implications for the environmental resource characterisation; and survey methodology.
- Number of samples per sampling station (justification for selected number and locations).
- Suite of in situ and ex situ parameters measured (see Table 5.1).
- Laboratory analytical methodologies and Detection Limits for each parameter (see Table 5.1).
- Data validation methods and Quality Assurance/Quality Control methods.

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The timing of marine and terrestrial surveys reflects the biological productivity and activity, which vary significantly throughout the year; for this reason, the timing of each survey shall be justified, and the results shall be accompanied by a discussion on their representation of the true biological activity and potential of the surveyed habitat.

For land and seascape characteristics, visual presentations of the proposed Project's features shall be from realistic perspective, angle and level in order to realistically inform the impact assessment study.

No new laboratory analytical results, including partial data (i.e. only selected parameters) shall be accepted from a non EIAC-accredited laboratory; analytical results from laboratory methodologies with detection limit (DL) higher than the regulatory standard for the parameters tested shall be rejected. In such events, the integrity of the information on Scoped In environmental resources and subsequent quantitative impact predictions and assessments shall be in doubt and the EIA study shall be rejected. More than one (1) EIAC-accredited laboratory can be involved in order to secure valid analytical results.

The information on the laboratory analyses shall be tabulated in the Chapter on the EIA Study Process as per Table 5.1 below:

Table 5.1 Example of Laboratory Analytical Specifications presentation for comparing Detection Limits with Regulatory Standard for environmental quality parameters

Parameter	Regulatory Standard (LO 61/91) & Appendix 1 and Appendix 2 of Annex 4 Part 2	Laboratory Methodology	Laboratory Detection Limit (DL)

Marine core samples as opposed to grab samples shall be collected for environmental characterisation of sediment where contamination is expected. The length of the core shall be dictated by the depth of excavation/dredging. Geotechnical samples shall not be accepted as environmental characterisation samples.

Comparison with Standards

The choice of standards against which analytical results are to be compared shall be known prior to finalising the sampling specifications, so as to ensure that the suite of analyses is complete.

EIA Methodology

This Section shall clearly present the approach that was followed in order to:

- Quantitatively predict the impacts on each of the Scoped In environmental resources from the proposed Project;
- Where applicable, quantitatively predict the cumulative impacts on each of the Scoped In environmental resources from the proposed Project in combination with other planned, (and soon to be implemented) Projects adjacent to the proposed Project site;
- Identify the magnitude and assess the significance of impacts, cumulative impacts included;
- Identify environmental risks and hazards; and
- Identify pertinent measures to prevent, mitigate against and compensate for (in that order) all significant impacts and risks.

Where relevant, the indirect/secondary impacts (i.e. triggered by a direct/primary impact) shall also be studied in the quantitative EIA.

This Section shall also clearly identify and explain the limitations of the EIA study for which assumptions have to be made. The limitations may include, but not limited to, the level of information on the proposed Project available at the time of the study, constraints in conducting the baseline surveys, and limitations on the impacts prediction and assessment process.

6. CHAPTER ON THE EXISTING ENVIRONMENT, IMPACTS, MITIGATION, RESIDUAL IMPACTS

Description of the Scoped In Environmental Resources

This Section shall entail the comprehensive descriptions of all Scoped In environmental resources and built environmental aspects; the descriptions shall be based on the data that is obtained through available data review, the baseline survey results, the consultation findings, and EIA team's site visit observations; all shall be included in the References & Bibliography list, and shall be clearly referenced accordingly in the text, where relevant.

For each Scoped In environmental resource, a brief statement on the (new) field baseline surveys and/or the gap analysis and subsequent complementary baseline surveys shall be made. Reference to the relevant Sections of the Chapter on the EIA Study Process and data source shall be made in the text in this Section.

The description of each environmental resource in this Section needs to be succinctly presenting and interpreting the detailed technical information, which is appended as Technical Appendix to the EIAR; the level of information and detail in this Section shall be such so as to comprehensively and completely describe the following characteristics of the environmental resource, and relate them to the impacts prediction:

- The main characteristics (biotic, abiotic, built environment).
- The land and water uses (roads, waterways, water intakes, industrial discharges urban and rural areas).
- The environmental quality status (surface and groundwater, sediment, air, soil, biodiversity).
- The prevailing regime/situation (local climate, hydrodynamic, flushing).
- The protection/conservation status (protected National sites/habitats/species; Internationally recognised protection status).
- The human environment (Culture, Heritage, Amenities, Recreation, Tourism).
- Utilities (existing cables pipelines, sewage & drainage networks).

- Waste management (existing management at Project site).
- Any other environmental information including Sustainability plans, programmes pertinent to the site and character of the proposed Project.

The information on all Scoped In environmental resources shall be presented, as much as possible, on maps that are easy to read, accurately scaled and oriented; GIS maps are preferred. Maps and drawings shall be provided on A3 size.

Prediction and Assessment of Environmental Impacts

The potential impacts during the construction and operational phases of the proposed Project on each one of the Scoped In environmental resources shall be quantitatively assessed as much as possible. The impacts shall be linked to the Method Statements and Project activities/works and their sequence as described in the Chapter on the Detailed Descriptions of the Proposed Project and Site.

The quantitative prediction of impacts on certain environmental resources, primarily surface and ground water quality, air quality, noise levels, and sediment transport and shoreline changes requires the use of numerical model simulations. This Section shall describe in brief the model simulations, which were undertaken to predict impacts from the proposed Project. The detailed description of the scope and results of all model simulations shall be included in the EIA study as Technical Appendices.

The impacts prediction and assessment information to be provided in this Section shall entail the following:

- A clear description of the nature of the most probable impacts, and the cause-pathway-effect relationship between the Project's planned activities and the potentially impacted environmental resources for all Project phases; the impacts within and outside the construction and operational footprints of the proposed Project, including cumulative trans-boundary impacts (if applicable) shall be clearly identified.
- The methodology followed to accurately predict and evaluate impacts (refer to Annex 4 Part 2 for the guidance on the quantitative prediction of marine/coastal impacts).
- Where a quantitative impact assessment for an environmental resource is not possible, this shall be stated; the reason for not carrying out the quantitative assessment shall be given, and the implications for achieving the objective to effectively protect the environmental resource in question shall be discussed. The risks to environmental protection from the qualitative impacts assessment shall be identified and reflected in the Project's monitoring plans for all Project phases.
- Where numerical model simulations to predict impacts were undertaken, the purpose of modelling shall be stated, the type of model for the concerned coastal processes, whether it is a 2D or 3D model, and its selection shall be explained and justified in terms of its applicability and appropriateness for the environmental impact assessment; model configuration and key input parameters and data source (i.e. available data or baseline survey) shall be described in detail. The modelling scenarios shall be rationalised for the intended purpose. All relevant model output shall be adequately interpreted. Clear conclusions and recommendations, and limitations of the modelling studies shall be clearly presented. Clear reference to the appended full model simulation technical report shall be made (by report revision number and section of the technical report, date).
- Spatial presentation of the area where impacts (both direct and indirect) in relation to the proposed Project's construction and operational footprints.
- The nature of the impact in terms of direct or indirect (i.e. secondary), reversibility, long or short term, local or regional or trans-boundary (if applicable).
- The significance of the identified impact; impacts shall be identified as negligible, minor, moderate, major adverse or beneficial.

Quantitative Prediction of Impacts

For guidance on the type of proposed Projects that require numerical model simulations, refer to Table 1 of

Annex 4 Part 1 and Table 4-1 of Annex 4 Part 2 of this Guidance. All numerical simulation model exercises shall be carried out by DM-ESD registered Environmental Consultants.

Cumulative Impacts

Environmental resources have a capacity to accommodate changes; single changes can be more easily accommodated than multiple. For this reason, the quantitative EIA study shall also include the prediction and assessment of cumulative impacts from the proposed Project, Projects that are in the construction stage as well as planned Projects. The area of impacts to be considered shall include the areas of both direct and indirect cumulative impacts.

The information on the most probable cumulative impacts shall be supported by a clear description of the factors leading to the cumulative nature of impacts.

Prevention, Mitigation and Compensation Measures

The measures to prevent, mitigate against or compensate for, preferably in that order, the identified significant impacts including the cumulative impacts shall be clearly described in this Section.

This Section shall also include information on how the identified prevention measures shall be in place at the start of the works/operations and before any of the predicted impacts are realised.

For the predicted significant impacts during the proposed Project's operational phase, all relevant and feasible technology, techniques, equipment, processes and procedures that will prevent and/or mitigate them shall be outlined.

It is possible that at the time of the EIA study, there is limited information on the construction methods available. Where this is the case, reference to previous experience or information on measures, proven to be effective, from similar Projects shall be made. Where such information can be available, it is expected to be fully utilised.

Where impacts cannot be prevented or mitigated but feasible compensation measure(s) can be implemented, these shall be discussed in this Section. Where compensation is not feasible either, a full explanation shall be provided and the significance for the impacted environmental resource shall be fully discussed.

The implementation of all identified measures, implementation schedule, responsible entity for the implementation, corrective measures, supervision, monitoring effectiveness, auditing and reporting shall be clearly identified and stated in this Section.

For marine/coastal Projects and Projects located near the protected area or expected to have significant impacts on the environment, the description of and discussion on all feasible measures is expected to be informative and constructive so that it forms the basis for the development of the Construction Environmental Control Plans (CECP) linked to specific NOCs or Management Plan for the operational phase of the Project as may be required.

Environmental Enhancement

Any environmental enhancement opportunities that the proposed Project presents shall also be presented and discussed. The latter shall also be re-iterated in the conclusions and recommendations section of the EIA study.

Residual and Unavoidable Impacts

It is possible that, following implementation of prevention and/or mitigation measures, certain impacts still remain, most likely at a lesser magnitude and spatial extent. These residual impacts are usually accepted as part of the unavoidable changes to environmental resources due to a proposed Project.

It is also possible that certain impacts cannot be prevented at all.

For these reasons, both the residual (post-mitigation) and unavoidable impacts shall be identified and discussed for all Project phases; where relevant, the discussion shall make references to the legal requirements/limits (numerical standards), as identified in the Chapter on Legal Framework and Standards. The residual and unavoidable impacts shall be characterised in the same way as the pre-mitigation impacts (i.e. minor, moderate or major).

Structure of Chapter 6

Table 6.1 below provides a preferred sequence of the Sections and sub-sections of Chapter 6 of the EIAR.

Table 6.1 EIAR Chapter 6 Sections breakdown

Section number	Section Heading – Scoped In Environmental Resource
6.1	Geology, Geomorphology
6.1.1	Existing Conditions
6.1.1.1	Available Data and Gap Analysis
6.1.1.2	Baseline Surveys
6.1.2	Impacts Assessment
6.1.3	Prevention, Mitigation, Compensation
6.1.4	Residual Impacts
Note: The succeeding Sections shall also contain the above Sub-sections.	
6.2	Oceanography, Hydrodynamic Regime, Coastal Processes
6.3	Climate and Air Quality
6.4	Noise and Vibration
6.5	Land Uses, Soil and Groundwater
6.6	Water and Sediment Quality
6.7	Aquatic Ecology and Nature Conservation
6.8	Terrestrial Ecology and Nature Conservation
6.9	Socio-Economic
6.10	Archaeology and Cultural Heritage
6.11	Amenities, Tourism and Recreation
6.12	Utilities and Infrastructure
6.13	Waste Generation and Management
6.14	Project Sustainability
6.15	Other Environmental Resources/Assets/Issues

7. CHAPTER ON THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS

This Chapter shall present a framework of an Environmental Management and Monitoring Plan (EMMP) for all proposed Project phases.

The Framework EMMP shall serve as a road map for the individual contractors to develop CECs (for the construction phase of marine/coastal Projects), and for the Project Owner to implement environmental monitoring requirements during the operational phase of their Projects.

The Framework EMMP shall include information on:

- The environmental resources expected to be impacted as per the EIA study;
- The mitigation measures, and corrective actions to be taken when measures fail to reach the protection objective;
- The monitoring plans, required to monitor:
 - o The effectiveness of the prevention and/or mitigation measures;
 - o The residual impacts and impacts on the environmental resources that are unavoidable or cannot be mitigated;

- Waste collection and disposal management plan;
- Inspection and auditing programmes;
- Roles and responsibilities for the effective implementation and management of the measures and monitoring plans;
- A mechanism for reporting, monitoring and auditing results;
- Environmental induction and training program for construction and operation workers and management; and
- External communications with regulators and interested parties/stakeholders.

Monitoring programmes for each Project phase shall be developed with as much detailed information as possible. The monitoring plans shall include, but not limited to, the following:

- The monitoring objectives to determine the effectiveness of the identified preventive/mitigation measures;
- In situ and ex situ environmental parameters to be monitored and the trigger levels to initiate investigations and remedial actions;
- Sampling design, methodology and equipment for measurement, data management & analysis, equipment calibration;
- An outline figure of the sampling locations reflecting anticipated impacts and sensitive receptors/targets; monitoring locations shown on clear maps/drawings;
- The duration and frequency of monitoring, with justification where possible (e.g. seasonal monitoring); the frequency shall reflect environmental sensitivities;
- The type and frequency of the reporting mechanism of the monitoring results (i.e. real time or periodic report submission or both); and
- The organisational structure of the Environmental Management Team, that is the responsible entity to undertake the monitoring plan and supervise/audit the monitoring team.

8. CHAPTER ON THE EIA CONCLUSIONS AND RECOMMENDATIONS

The EIA study conclusions can be presented in this Chapter as Project Environmental Matrices for both the Project Construction and Operational Phases; references to the relevant Sections and Sub-sections (by number) of the Chapters on the EIA Study Process and the Existing Environment, Impacts, Mitigation, Residual Impacts, shall feature in each Matrix, as appropriately.

Each Matrix shall comprise the following:

- Planned works/activities/operations of the proposed Project;
- All Scoped In environmental resources within and around the proposed Project's site that were studied in the EIA;
- Predicted impacts;
- Identified measures;
- Residual impacts;
- Recommended monitoring activity, identifying monitoring frequency and referencing drawings of monitoring locations; and
- Environmental enhancement opportunities.

Both Project Construction and Operational Environmental Matrices could be prepared early on in the EIA study to serve as a road map to the identification exercise of cause-path-impact, and as the impacts identification

and assessment study develops, they can be populated accordingly to include the identified measures, residual impacts and monitoring plans.

An example of a Construction Environmental Matrix is given in Table 8.1 below.

Table 8.1 Example of a Construction Environmental Impacts Matrix

Planned Activity & Works*	Environmental Resource	Impacts	Risk of Impact happening (Low, Medium, High)	Prevention	Mitigation	Residual Impacts	Compensation	Monitoring
Reclamation	Water quality	Increase in background TSS levels		- Bund reclamation area	- Revise reclamation method and speed	Lesser increase of TSS near reclamation	n/a	- Real time - Ex situ (frequency to be noted here)
		Dredging plume migrating towards sensitive targets		- Weirs, settling basins - Silt curtains	- Install double silt curtain outside reclamation discharge point			
	Marine Habitat	Blanketing of seagrass beds		n/a	n/a	n/a	Compensation plan	frequency of periodic surveys to be noted here
		Smothering of corals		Relocation				frequency of periodic surveys to be noted here
	Air quality	Exhaust emissions from dredger and auxiliary land vehicle fleet		- Green fuel (dredger) - Switched off engines				
**Pre-Construction Site preparation works (where applicable) to be included and identified in the Matrix								

Similarly, an Environmental Matrix for the Operational Phase of the proposed Project must be prepared.

9. CHAPTER ON THE STATEMENT OF COMMITMENT

This Chapter of the EIAR shall include the statement of commitment to the implementation of the EIA requirements; this statement can either be prepared by the Project Owner or by the appointed Environmental Consultant.

The statement of commitment shall particularly highlight the EIA recommendations for:

- The preferred identified prevention/mitigation or compensation measures;
- Corrective actions in the event that measures prove ineffective; and
- Monitoring plans for all phases of the Project.

ANNEXES

The detailed description of the scope and results of all baseline surveys and numerical model simulations shall be included in the EIAR as Technical Appendices.

BIBLIOGRAPHY & REFERENCES

All of the data sources (available data, research papers and conference publications, periodical articles, working group reports, guidelines, other published EIA studies, Environmental Legislation and Regulations, Decrees, International Conventions and Agreements) shall be listed in the Bibliography and References List of the EIAR.

PART 2 - CHECKLIST FOR THE ENVIRONMENTAL CONSULTANT IN PREPARATION FOR THE SUBMISSION OF AN EIAR

Table 1 below entails a checklist that the Environmental Consultant needs to fill out, in preparation of an EIAR for the purposes of applying for an Environmental Clearance. This Checklist shall be dated, signed and stamped by the Environmental Consultant, and shall be submitted together with the EIAR.

Table 1: EIAR Contents Checklist

EIAR Title	
Revision No	
Date of Submission	
Cover Page and Contents List	
<input type="checkbox"/>	Project title, name of Project Owner and Consultant, date, revision number
<input type="checkbox"/>	QA sheet with date of issue, revision number, name of author, reviewer and approver
<input type="checkbox"/>	Table of Contents with links to each heading and sub-heading
<input type="checkbox"/>	List of Abbreviations
<input type="checkbox"/>	List of Tables
<input type="checkbox"/>	List of Figures
<input type="checkbox"/>	List of Engineering Plans / Maps
<input type="checkbox"/>	List of Annexes
Executive Summary	
<input type="checkbox"/>	A brief description of the proposed Project written in a non-technical language
<input type="checkbox"/>	Statement of need of proposed Project
<input type="checkbox"/>	Alternatives considered
<input type="checkbox"/>	Scoped in and out Environmental Resources
<input type="checkbox"/>	Summary of gap analysis and environmental baseline survey
<input type="checkbox"/>	Summary of the project characteristics constituting the sources of significant changes in the existing environment leading to significant impacts
<input type="checkbox"/>	Description of significant impacts and measures to prevent, mitigate or compensate for
<input type="checkbox"/>	List of the environmental resources that will need monitoring to verify the effectiveness of the selected measures
<input type="checkbox"/>	Recommendation for resolving any (where applicable) environmental conflicts of interest
<input type="checkbox"/>	A brief account of the identified compensation measures (where applicable)
Chapter 1 – Introduction	
<input type="checkbox"/>	General description of Project; Affection Plan; Master Plan; clear, to scale and informative figures showing project location and surrounding areas
<input type="checkbox"/>	Statement of need; Advantages and disadvantages to the natural and built environment, and local economy; Social benefits
	Consideration, information on:
<input type="checkbox"/>	• Alternatives to the proposed Project (i.e. type, location)
<input type="checkbox"/>	• Alternatives to individual elements (i.e. process/technology/techniques) of the Project
<input type="checkbox"/>	• Major environmental aspects and significant environmental impacts for each alternative
<input type="checkbox"/>	• “Do Nothing” option
Chapter 2 – Legal Framework and Standards	
<input type="checkbox"/>	Applicable Federal and Emirate Level Laws, Regulations, Decrees on Environmental Protection

<input type="checkbox"/>	Federal and Emirate Level Standards and Threshold Limits that apply to the nature of the proposed Project and anticipated impacts
<input type="checkbox"/>	Applicable International Treaties and Conventions
Chapter 3 – The EIA Project Team	
<input type="checkbox"/>	The DM-registered environmental consultancy firm, who will undertake the quantitative EIA
<input type="checkbox"/>	The EIA Project team leader and team members, by name; their respective field of expertise, and the corresponding module or area of study assigned to each (“key deliverable”)
<input type="checkbox"/>	The name(s) of DM-ESD registered sub-consultant(s) and their respective study scope for the EIA; proven experience, and DM-accreditation details
<input type="checkbox"/>	The name(s) of the EIAC-accredited laboratories involved in the baseline surveys
Chapter 4 – Detailed Project Description (Construction and Operational Phases)	
<input type="checkbox"/>	Project Master Plan and Affection Plan
<input type="checkbox"/>	Nature, size and location of the project; the nature of the existing land use(s) and expected changes at the location of the proposed Project
<input type="checkbox"/>	Pre-construction site clearance needs for mobilisation
<input type="checkbox"/>	Description of expected Project footprint of construction and operational phases
<input type="checkbox"/>	Description of immediate surroundings and its proximity to sensitive land uses or areas of environmental importance and protection status within the Emirate of Dubai, and across the borders (as applicable)
<input type="checkbox"/>	Detailed description of major construction works
<input type="checkbox"/>	(If applicable) Operational phase processes/activities, environmental aspects (details), waste stream and disposal options, pollutants/disturbances from planned and unplanned activities
<input type="checkbox"/>	Maps, drawings, figures, photographic plates supporting all Project description and activities
<input type="checkbox"/>	Maps, drawings, figures are up to date and clear to read with informative legend
<input type="checkbox"/>	Project status, outline construction schedule
<input type="checkbox"/>	Total capital cost
<input type="checkbox"/>	(If applicable) If the project is externally funded, the name of the funding organisation(s) (e.g. World Bank/IFC) and their environmental protection requirements
Chapter 5 – Description of the Project's EIA Study Process	
<input type="checkbox"/>	Scoping in and out of environmental resources
<input type="checkbox"/>	Justification on scoped-out environmental resources
<input type="checkbox"/>	Available data review
<input type="checkbox"/>	Gaps analysis
	New and/or Complementary Baseline survey:
<input type="checkbox"/>	<ul style="list-style-type: none"> Identification and detailed specification of all additional data collection studies (field surveys etc.) for all scoped in environmental resources
<input type="checkbox"/>	<ul style="list-style-type: none"> Detailed, to scale and clear to read maps and drawings of additional surveys
<input type="checkbox"/>	<ul style="list-style-type: none"> Name(s) of the DM-registered field survey team(s) and the EIAC-accredited laboratory(s) for all analysed parameters
<input type="checkbox"/>	<ul style="list-style-type: none"> Field survey and analytical specifications facilitate comparison with the requirements of the Local Order No. 61 of 1991
<input type="checkbox"/>	<ul style="list-style-type: none"> Field survey and analytical specifications enable comparison with selected quality standards
<input type="checkbox"/>	<ul style="list-style-type: none"> Field survey and analytical specifications enable a comprehensive and detailed quantitative impacts prediction and evaluation
<input type="checkbox"/>	<ul style="list-style-type: none"> Field sampling locations are depicted on clear, easy to read and to scale maps
<input type="checkbox"/>	<ul style="list-style-type: none"> Character of survey (e.g. one off or seasonal) and implications for the environmental resource characterisation explained
<input type="checkbox"/>	<ul style="list-style-type: none"> Laboratory analytical methodologies and detection limits for all parameters

<input type="checkbox"/>	• Data validation methods and Quality Assurance/Quality Control methods
EIA Methodology	
<input type="checkbox"/>	• Explanation of the methodologies for assessing the significance of impacts
<input type="checkbox"/>	• Identification of numerical studies
<input type="checkbox"/>	• Limitations of the EIA Study
Chapter 6 – Environmental Baseline Information, Impacts, Mitigation and Residual Impacts	
<input type="checkbox"/>	Description of existing scoped In environmental resources (air, soil, water, shoreline, waterways), land and water uses within proposed Project location and surrounding areas
<input type="checkbox"/>	Environmental sensitivities (wildlife, residential areas, protected/designated areas, water intakes) at proposed Project location and surrounding areas
<input type="checkbox"/>	Detailed, to scale and easy to read maps and drawing showing the spatial distribution of environmental resources and Environmental sensitivities within and adjacent to the proposed Project
<input type="checkbox"/>	Identification and detailed specification of all studies that were undertaken to predict impacts (direct and indirect) and their magnitude (spatially and temporary) during all phases of the project
<input type="checkbox"/>	Description of specific impact prediction studies (i.e. numerical model study specifications)
<input type="checkbox"/>	Justification on confidence level for qualitative impact assessment, where applicable
<input type="checkbox"/>	Identification and assessment of impacts as per the EIA methodology
<input type="checkbox"/>	Acknowledgment and description of the potential cumulative impacts on each environmental resource
<input type="checkbox"/>	Spatial presentation of the area where impacts (both direct and indirect) shall be felt
<input type="checkbox"/>	Description of feasible mitigation measures to prevent/mitigate against/compensate measures
<input type="checkbox"/>	Measures relate to described construction methods and operational phase characteristics
<input type="checkbox"/>	Where applicable, environmental enhancement was identified
<input type="checkbox"/>	Acknowledgment of potential for and description of most probable residual impacts
Chapter 7 – Environmental Management and Monitoring Plan	
Outline EMMP:	
<input type="checkbox"/>	• Scope and objectives of the project-wide environmental monitoring programmes
<input type="checkbox"/>	• Roles and responsibilities for effective implementation and management
<input type="checkbox"/>	• Mechanism for reporting monitoring and auditing results
<input type="checkbox"/>	• External communications with regulators and interested parties
Identification of environmental standards for the monitoring programme to include monitoring of:	
<input type="checkbox"/>	• Cumulative impacts
<input type="checkbox"/>	• Residual impacts
Chapter 8 – Conclusions and Recommendations	
Succinct and to the point information on:	
<input type="checkbox"/>	• Proposed Project characteristics
<input type="checkbox"/>	• Environmental resources and associated significant impacts
<input type="checkbox"/>	• Identified measures to prevent, mitigate, compensate for impacts
• Recommendations for monitoring:	
<input type="checkbox"/>	○ The effectiveness of measures
<input type="checkbox"/>	○ Impacts, including cumulative and residual
<input type="checkbox"/>	○ Environmental enhancement opportunities
<input type="checkbox"/>	EIA matrix with scoped in environmental resources, project activities/works, impacts, mitigation, monitoring

Chapter 9 – Statement of Commitment

Statement of Commitment on the EIAR recommendations on:	
<input type="checkbox"/>	• The preferred identified prevention/mitigation or compensation measures
<input type="checkbox"/>	• Corrective actions in the event that measures prove ineffective
<input type="checkbox"/>	• Monitoring plans for all phases of the Project

Annexes

<input type="checkbox"/>	References/Bibliography
<input type="checkbox"/>	Relevant engineering drawings
<input type="checkbox"/>	Appointed Environmental Consultants' CVs, portfolio of Project experience, etc
<input type="checkbox"/>	Project Owner's Dubai License (for private companies)
<input type="checkbox"/>	Detailed reports with methodologies and results of studies undertaken for the baseline surveys and impacts prediction (e.g. numerical simulation studies) and accreditation details of the laboratory.

Quality of Submission

Inclusive of all above requested information for the Competent Authority to reach a clear understanding of the Project's:	
<input type="checkbox"/>	• Location and boundaries
<input type="checkbox"/>	• Characteristics
<input type="checkbox"/>	• Significant impacts
<input type="checkbox"/>	• Recommended measures and monitoring programmes
<input type="checkbox"/>	• Roles and responsibilities, and commitments
<input type="checkbox"/>	Compliant with the EIAR Guidance in contents and structure
<input type="checkbox"/>	Clarity of written language and submission of a complete document, text and annexes
<input type="checkbox"/>	Correct cross-referencing between main EIAR text and its annexes
<input type="checkbox"/>	Clarity of graphics, text and tables

DATE	NAME OF ENVIRONMENTAL CONSULTANCY
	STAMP AND SIGNATURE

Classification: SHARED – CONFIDENTIAL



Annex 3

Contents/Outline of an Environmental
Impact Assessment Summary (EIAS)

Contents/Outline of an Environmental Impact Assessment Summary (EIAS)

INTRODUCTION

The EIAS serves as a statement of commitment by the Project Owner on his obligations to comply with its recommendations and with Federal Legislation requirements on environmental protection. The EIAS is also a binding environmental protection agreement between a Project Owner and Dubai Municipality-Environmental Sustainability Department (DM-ESD), which is the Competent Authority for the implementation of Federal Legislation in the Emirate of Dubai.

Purpose and Structure

The purpose of Annex 3 “EIA Summary Outline and Contents” is to provide guidance on the structure and contents of an Environmental Impact Assessment Summary (EIAS) for development, infrastructure, coastal and marine Projects requiring a qualitative EIA study. Part 1 provides the guidance document for EIAS, whereas Part 2 provides the checklist, for submission to AESEAS, which needs to be completed by the Environmental Consultant in preparation of the EIAS for Development and Infrastructure Projects.

The structure of this guidance reflects, in most parts, the structure of an EIAS. Guidance on the contents of each chapter and its sections are also provided in Part 1.

PART 1 – GUIDANCE ON THE CONTENTS OF EIA SUMMARY

Guidance on the contents of EIAS is provided below:

EIAS COVER PAGE AND CONTENTS LIST

The report text shall be preceded by:

- (i) Cover/Title Page
- (ii) QA sheet with date of issue, revision number, name of author, reviewer and approver
- (iii) Table of Contents with links to each heading and sub-heading
- (iv) List of Abbreviations
- (v) List of Tables
- (vi) List of Figures
- (vii) List of Engineering Plans / Maps
- (viii) List of Annexes

1. CHAPTER ON INTRODUCTION

The Introduction shall comprise:

- General Project Description;
- Statement of Need for the Project;
- Project Alternatives and Preferred Option; and
- Information on External Project Funding (where applicable).

General Project Description

This Section shall provide a general description of the proposed Project, including information on the nature, size and location of the Project, its processes, products, services as appropriate, and the land/water uses of the surrounding areas. This information shall be supported by:

- Project Affection Plan and approved Final Master Plan; and
- Clear, to scale and informative maps and figures showing the Project location and its immediate surroundings.

Statement of Need for Project

This Section shall give a clear statement on why the Project is needed, its compatibility with the Federal and Emirate development strategies, programmes and plans. It shall present the long term social and economic benefits to the Emirate and society on the whole, which call for an overriding public interest when significant adverse negative impacts with little potential for prevention and/or mitigation are predicted.

Project Alternatives and Preferred Option

This Section shall clearly state the Project alternatives (e.g. nature, location, size) or individual elements of the Project (i.e. design, processes), which were considered in order to identify the preferred alternative option, and link this with the justification for its Statement of Need. The likely significant impacts and feasible prevention / mitigation / compensation measures for each identified Project alternative shall be presented, as shall the reasoning for eliminating each option.

The “Do-Nothing” Option

The “Do-Nothing” option (i.e. no proposed development at the proposed location or elsewhere) and its long term social, economic and environmental consequences shall also be briefly discussed.

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2. CHAPTER ON THE EIA PROJECT TEAM

This Chapter shall provide information on:

- The DM-ESD-registered environmental consultancy firm undertaking the EIA study;
- The EIA Project Team Leader and team members, by name; their respective field of expertise, and the corresponding module or area of study assigned to each (“key deliverable”);
- The name(s) of DM-ESD-registered sub-consultant(s), the scope of their works in the EIA study (e.g. environmental baseline surveys), proven experience, and DM-accreditation details;
- When required, the name of the EIAC-accredited laboratories that will be commissioned for the analyses of environmental samples during the baseline surveys with the accreditation details.

3. CHAPTER ON THE DETAILED DESCRIPTION OF THE PROJECT AND PROJECT SITE

This Chapter shall clearly present all the available information on the proposed Project and its location, with as much detail as possible, provided on GIS maps (where relevant), on the following elements of the proposed Project:

- The proposed Project’s location, delineation of Project boundaries, and planning status shall be explained; copy of Affection Plan and Master Plan to be included;
- Description of the nature of the proposed Project (e.g. residential, commercial, mixed, industrial);
- The size (spatial coverage) of the proposed Project, in relation to the surrounding developments/land uses shall be given;

- Description of the nature of the existing land use(s) and expected changes at the location of the proposed Project;
- The proposed Project's immediate surroundings and its proximity to sensitive land uses or areas of environmental importance and protection status within the Emirate of Dubai shall be identified; this information shall be supported by high quality, clear and informative maps (to scale), figures and photos;
- For proposed Projects that are adjacent or very close to the borders of the Emirate of Dubai, information on land use(s) across the borders shall be provided;
- The phases of Project development and construction, supported by a Project works schedule shall be explained; the footprint of the construction works shall be clearly provided;
- A detailed description of major construction works, such as deep excavations, temporary dewatering, land excavation and anticipated volumes of earth material associated with such works shall be given; available or most probable Method Statements shall be included in this Chapter;
- The proposed Project layout showing:
 - The major utilities and infrastructure (e.g. permanent artificial water bodies, roads, bridges within the footprint of the proposed Project);
 - The locations of air emissions sources and effluent discharge outfalls.
- Description of the services, technologies, products, waste stream associated with the construction and operational phases of the proposed Project, including site clearance prior to construction (where relevant);
- (Where applicable) A comprehensive description of the Project operational processes, process flowchart, types and quantities of raw materials, production capacity, energy and water requirements, material balance, and water balance shall be provided;
- The information pertaining to waste streams (air, water, hazardous waste, solid waste, soil), shall need to be provided;
- The anticipated major sources of air, soil and water contamination or disturbance to wildlife (e.g. noise and light) and built environment (i.e. existing buildings, infrastructure) shall be identified and described in detail;
- Description of the existing legitimate uses by natives, residents and tourists at the proposed Project area and its surrounding areas;
- Total capital cost; and
- (Where applicable) If the proposed Project is externally funded, the name of the funding organisation(s) (e.g. World Bank/IFC), and any environmental protection requirements of the funding organisation, in addition to these guidelines, which the EIA study needs to comply with shall be explained.

4. CHAPTER ON THE EIA STUDY PROCESS

Scoping In and Out of Environmental Resources

This Chapter shall provide a description of the Scoping In and Out of exercise. The purpose of this exercise is to identify which environmental resources are not within the Project site, in its immediate surroundings nor, for very obvious reasons, are likely to be impacted upon as a result of the proposed Project. Any environmental resources that falls in this category shall be Scoped Out of the environmental impact study. This exercise shall also include trans-boundary environmental resources.

The conclusion on Scoping Out an environmental resource needs to be fully justified. Any environmental resource that is not listed as Scoped Out is therefore identified as a Scoped In resource and it shall be studied in the EIAs.

Where there is no obvious reason to justify Scoping Out an environmental resource, this resource shall be subject to the EIAS.

The environmental resources to be subject to the Scoped In and Out exercise for the purposes of the EIAS are as follows:

Geology, Hydro-geology, Geomorphology
Oceanography, Hydrodynamic Regime, Coastal Processes
Climatic Conditions, Climate Change and Air Quality
Noise and Vibration
Land Uses, Soil and Groundwater
Water Uses, Water and Sediment Quality
Aquatic Ecology and Nature Conservation
Terrestrial Ecology and Nature Conservation
Archaeology and Cultural Heritage
Amenities, Tourism and Recreation
Utilities and Infrastructure
Waste Generation and Management
Sustainability
Other Environmental Resources/Assets/Issues

Environmental Resources Data Collection

This shall give a brief description of the type of sources, which were sought to obtain data on the Scoped In environmental resources; such sources can include:

- Review of Existing data and pertinent publications
- Observations, sightings, and photographs
- Consultation findings
- Anecdotal evidence

Review of Existing Data

The review of the available environmental data (e.g. secondary baseline data) is primarily a desk-top study. This Section of the EIAS shall clearly identify the available data that was included in the description of the Scoped In environmental resources and the impacts prediction exercises. Available environmental data can be referred to by title of publication, name(s) of author(s), date, and source of publication.

The validity of and confidence level on existing data for the purposes of the qualitative impacts prediction shall need to be clearly stated in this Section. Data that is older than 5 years shall not be deemed valid for the EIA study. The available relevant data that is 5 years old or less may be accepted provided that the data is still representative of the current site condition, there are no obvious environmental contamination within the project plot, and no significant change in the land-use within the vicinity is observed. Justification as to why it is assumed to be representative data should be provided.

Where maps, drawings and photographs from available data are to be used in the EIA study, these shall be included and shall be of good quality and easy to read.

EIA Methodology

This Section shall clearly present the approach that was followed in order to:

- Predict (qualitatively) the impacts on each of the Scoped In environmental resources from the proposed Project;
- Where applicable, highlight the potential for cumulative impacts on each of the Scoped In environmental resources from the proposed Project in combination with other planned, (and soon to be implemented) Projects adjacent to the proposed Project site;
- Identify the magnitude and assess the significance of impacts, cumulative impacts included
- Identify environmental risks and hazards; and
- Identify pertinent measures to prevent, mitigate against and compensate for (in that order) all significant impacts and risks.

Where relevant, the indirect/secondary impacts (i.e. triggered by a direct/primary impact) shall also be studied in the EIA.

This Section shall also clearly identify and explain the limitations of the EIA study for which assumptions have to be made. The limitations may include, but not limited to, the level of information on the proposed Project available at the time of the study, constraints in obtaining available baseline data, and limitations on the impacts prediction and assessment process.

5. CHAPTER ON THE EXISTING ENVIRONMENT, IMPACTS, MITIGATION, RESIDUAL IMPACTS

Description of the Scoped In Environmental Resources

This Section shall entail the descriptions of all Scoped In environmental resources and built environmental aspects; the descriptions shall be based on the data that is obtained through available data review, the consultation findings, and EIA team's site visit observations; all shall be included in the References & Bibliography list, and shall be clearly referenced accordingly in the text, where relevant.

The description of each environmental resource in this Section needs to be as complete as possible using such information from existing data sources so as to comprehensively and completely describe the following characteristics of the environmental resource, and relate them to the impacts prediction:

- The main characteristics (biotic, abiotic, built environment);
- The land and water uses (roads, waterways, industrial discharges urban and rural areas);
- The environmental quality status (surface and groundwater, sediment, air, soil, biodiversity);
- The prevailing regime/situation (local climate, hydrodynamic, flushing);
- The protection/conservation status (protected national sites/habitats/species; internationally recognised protection status);
- The human environment (culture, heritage, amenities, recreation, tourism);
- Utilities (existing cables pipelines, sewage & drainage networks);
- Waste management (existing management at Project site); and
- Any other environmental information including Sustainability plans, programmes pertinent to the site and character of the proposed Project.

The information on all Scoped In environmental resources shall be presented, as much as possible, on maps that are easy to read, accurately scaled and oriented; GIS maps are preferred. Maps and drawings shall be presented in A3 size.

Prediction and Assessment of Environmental Impacts

The potential impacts during the construction and operational phases of the proposed Project on each one of the Scoped In environmental resources shall be reflecting the Method Statements and Project activities/works and their sequence as described in the Chapter on the Detailed Descriptions of the Proposed Project and Site.

The impacts prediction and assessment information to be provided in this Section shall entail the following:

- A clear description of the nature of the most probable impacts, and the cause-pathway-effect relationship between the Project's planned activities and the potentially impacted environmental resources for all Project phases; the impacts within and outside the construction and operational footprints of the proposed Project, including cumulative and trans-boundary impacts (if applicable) shall be clearly identified;
- The methodology followed to accurately predict and evaluate impacts;
- Spatial presentation of the area where impacts (both direct and indirect) in relation to the proposed Project's construction and operational footprints;
- The nature of the impact in terms of direct or indirect (i.e. secondary), reversibility, long or short term, local or regional or trans-boundary (if applicable); and
- The significance of the identified impact; impacts shall be identified as negligible, minor, moderate, major adverse or beneficial.

Cumulative Impacts

Environmental resources have a capacity to accommodate changes; single changes can be more easily accommodated than multiple. For this reason, the EIAS shall also discuss the potential for and nature of cumulative impacts from the proposed Project and planned Projects. The area of impacts to be considered shall include the areas of both direct and indirect cumulative impacts.

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The information on the most probable cumulative impacts shall be supported by a clear description of the factors leading to the cumulative nature of impacts.

Prevention, Mitigation and Compensation Measures

The measures to prevent, mitigate against or compensate for, preferably in that order, the identified significant impacts including the cumulative impacts shall be clearly described in this Section.

This Section shall also include information on how the identified prevention measures shall be in place at the start of the works/operations and before any of the predicted impacts are realised.

For the predicted significant impacts during the proposed Project's operational phase, all relevant and feasible technology, techniques, equipment, processes and procedures, which will prevent and/or mitigate them shall be outlined.

It is possible that at the time of the EIA study there is limited information on the construction methods available. Where this is the case, reference to previous experience or information on measures, proven to be effective, from similar Projects shall be made. Where such information can be available, it is expected to be fully utilised.

Where impacts cannot be prevented or mitigated but feasible compensation measure(s) can be implemented, these shall be discussed in this Section. Where compensation is not feasible either, a full explanation shall be provided and the significance for the impacted environmental resource shall be fully discussed.

The implementation of all identified measures, the implementation schedule, the responsible entity for the implementation, corrective measures, supervision, monitoring effectiveness, auditing and reporting shall be clearly identified and stated in this Section.

The description of and discussion on all feasible measures is expected to be informative and constructive so that it forms the basis for the development of the Construction Environmental Control Plan (CECP) as may be required by the concerned DM-ESD Section.

Environmental Enhancement

Any environmental enhancement opportunities that the proposed Project presents, shall also be presented and discussed. The latter shall also be re-iterated in the conclusions and recommendations section of the EIAS.

Residual and Unavoidable Impacts

It is possible that, following implementation of prevention and/or mitigation measures, certain impacts still remain, most likely at a lesser magnitude and spatial extent. These residual impacts are usually accepted as part of the unavoidable changes to environmental resources due to a proposed Project.

It is also possible that certain impacts cannot be prevented at all.

For these reasons, both the residual (post-mitigation) and unavoidable impacts shall be identified and discussed for all Project phases; where relevant, the discussion shall make references to the legal requirements/limits (numerical standards), as identified in the Chapter on Legal Framework. The residual and unavoidable impacts shall be characterised in the same way as the pre-mitigation impacts (i.e. minor, moderate or major).

6. CHAPTER ON THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLANS

This Chapter shall present a framework of an Environmental Management and Monitoring Plan (EMMP) for all proposed Project phases.

The Framework EMMP shall include information on:

- The environmental resources expected to be impacted as per the EIA study;
- The mitigation measures, and corrective actions to be taken when measures fail to reach the protection objective;
- The monitoring plans, required to monitor:
 - o The effectiveness of the prevention and/or mitigation measures;
 - o The residual impacts and impacts on the environmental resources that are unavoidable or cannot be mitigated;
- Waste collection and disposal management plan;
- Inspection and auditing programmes;
- Roles and responsibilities for the effective implementation and management of the measures and monitoring plans;
- A mechanism for reporting, monitoring and auditing results;
- Environmental induction and training program for construction and operation workers and management;
- External communications with regulators and interested parties/stakeholders.

Monitoring programmes for each Project phase shall be developed with as much detailed information as possible, and included in this Chapter; the monitoring plans shall include, but not limited to, the following:

- The monitoring objectives to determine the effectiveness of the identified preventive/mitigation measures;
- In situ and ex situ environmental parameters to be monitored and the trigger levels to initiate investigations and remedial actions;
- Sampling design, methodology and equipment for measurement, data management & analysis, equipment calibration;

- An outline figure of the sampling locations reflecting anticipated impacts and sensitive receptors/ targets; monitoring locations shown on clear maps/drawings;
- The duration and frequency of monitoring, with justification where possible (e.g. seasonal monitoring);
- The type and frequency of the reporting mechanism on the monitoring results (i.e. real time or periodic report submission or both); and
- The organisational structure of the Environmental Management Team, that is the responsible entity to undertake the monitoring plan and supervise/audit the monitoring team.

7. CHAPTER ON THE EIA CONCLUSIONS AND RECOMMENDATIONS

The EIA study conclusions can be presented in this Chapter as Project Environmental Matrices for both the Project Construction and Operational Phases; references to the relevant Sections and Sub-sections (by number) of the Chapters on the EIA Study Process and the Existing Environment, Impacts, Mitigation, Residual Impacts, shall feature in each matrix, as appropriately.

Each Matrix shall comprise the following:

- Planned works/activities/operations of the proposed Project;
- All Scoped In environmental resources within and around the proposed Project's site that were studied in the EIA;
- Predicted impacts;
- Identified measures;
- Residual impacts;
- Recommended monitoring activity, identifying monitoring frequency and referencing drawings of monitoring locations; and
- Environmental enhancement opportunities.

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Both Project Construction and Operational Environmental Matrices could be prepared early on in the EIA study to serve as a road map to the identification exercise of cause-path-impact, and as the impacts identification and assessment study develops they can be populated accordingly to include the identified measures, residual impacts and monitoring plans.

An example of either matrix is given in Table 7.1 below.

Table 7.1 Example of a Construction Environmental Matrix

Planned Activity & Works*	Environmental Resource	Impacts	Risk of Impact happening (Low, Medium, High)	Prevention	Mitigation	Residual Impacts	Compensation	Monitoring
**Pre-Construction Site preparation works (where applicable) to be included and identified in the Matrix								

8. CHAPTER ON THE STATEMENT OF COMMITMENT

This Chapter of the EIAs shall include the statement of commitment to the implementation of the EIA requirements; this statement can be prepared by either the Project Owner or by the appointed Environmental Consultant.

The statement of commitment shall particularly highlight the EIA recommendations for:

- The preferred identified prevention/mitigation or compensation measures;
- Corrective actions in the event that measures prove ineffective; and
- Monitoring plans for all phases of the Project.

ANNEXES

The detailed description of the scope and results of all baseline surveys, if required, shall be included in the EIAS as Technical Appendices.

BIBLIOGRAPHY & REFERENCES

All of the data sources (available data, research papers and conference publications, periodical articles, working group reports, guidelines, other published EIA studies, Environmental Legislation and Regulations, Decrees, International Conventions and Agreements) shall be listed in the Bibliography and References List of the EIAS.

PART 2 - CHECKLIST FOR THE ENVIRONMENTAL CONSULTANT IN PREPARATION FOR THE SUBMISSION OF AN EIAS

The Table 1 below provides a checklist which needs to be accomplished by the Environmental Consultant in preparation of an EIAS for the purposes of applying for an Environmental Clearance. This Checklist shall be dated, signed and stamped by the Environmental Consultant, and shall be submitted together with the EIAS.

Table 1: EIAS Contents Checklist

<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	General description of Project; Affection Plan; Master Plan; clear, to scale and informative figures showing Project location and surrounding areas
<input type="checkbox"/>	Statement of need; Advantages and disadvantages to the natural and built environment, and local economy; Social benefits
	Consideration, information on:
<input type="checkbox"/>	<ul style="list-style-type: none"> • Alternatives to the proposed project (i.e. type, location)
<input type="checkbox"/>	<ul style="list-style-type: none"> • Alternatives to individual elements (i.e. process/technology/techniques) of the Project
<input type="checkbox"/>	<ul style="list-style-type: none"> • Major environmental aspects and significant environmental impacts for each alternative
<input type="checkbox"/>	<ul style="list-style-type: none"> • “Do Nothing” option

<input type="checkbox"/>	
<input type="checkbox"/>	The EIA Project Team Leader and team members, by name; their respective field of expertise, and the corresponding module or area of study assigned to each ("key deliverable")
<input type="checkbox"/>	The name(s) of DM-ESD registered sub-consultant(s) and their respective study scope for the EIA; proven experience, and DM-accreditation details
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	Nature, size and location of the Project; the nature of the existing land use(s) and expected changes at the location of the proposed Project
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	Description of immediate surroundings and its proximity to sensitive land uses or areas of environmental importance and protection status within the Emirate of Dubai, and across the borders (as applicable)
<input type="checkbox"/>	
<input type="checkbox"/>	(When applicable) Operational phase processes/activities, environmental aspects (details), waste stream and disposal options, pollutants/disturbances from planned and unplanned activities
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
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<input type="checkbox"/>	
<input type="checkbox"/>	Description of existing scoped in environmental resources (air, soil, water, shoreline, waterways), land and water uses within proposed Project location and surrounding areas
<input type="checkbox"/>	
<input type="checkbox"/>	Detailed, to scale and easy to read maps and drawing showing the spatial distribution of environmental resources and environmental sensitivities within and adjacent to the proposed Project
<input type="checkbox"/>	Justification on confidence level for qualitative impact assessment
<input type="checkbox"/>	A description of the likely effects / impacts of the proposed Project
<input type="checkbox"/>	Description of feasible mitigation measures to prevent/mitigate against/compensate measures
<input type="checkbox"/>	Acknowledgment of potential for and description of most probable residual impacts

Chapter 6 – Environmental Management and Monitoring Plan

	Outline EMMP:
<input type="checkbox"/>	• Scope and objectives of the project-wide environmental monitoring programmes
<input type="checkbox"/>	• Roles and responsibilities for effective implementation and management
<input type="checkbox"/>	• Mechanism for reporting monitoring and auditing results
<input type="checkbox"/>	• External communications with regulators and interested parties
	Identification of environmental standards for the monitoring programme to include monitoring of:
<input type="checkbox"/>	• Cumulative impacts
<input type="checkbox"/>	• Residual impacts

Chapter 7 – Conclusions and Recommendations

	Concise information on:
<input type="checkbox"/>	• Proposed Project characteristics
<input type="checkbox"/>	• Environmental resources and associated significant impacts
<input type="checkbox"/>	• Identified measures to prevent, mitigate, compensate for impacts
	• Recommendations for monitoring:
<input type="checkbox"/>	○ The effectiveness of measures
<input type="checkbox"/>	○ Impacts, including cumulative and residual
<input type="checkbox"/>	○ Environmental enhancement opportunities
<input type="checkbox"/>	EIA matrix with scoped in environmental resources, project activities/works, impacts, mitigation, monitoring

Chapter 8 – Statement of Commitment

	Statement of commitment on the EIAS recommendations on:
<input type="checkbox"/>	• The preferred identified prevention/mitigation or compensation measures
<input type="checkbox"/>	• Corrective actions in the event that measures prove ineffective
<input type="checkbox"/>	• Monitoring plans for all phases of the Project

Annexes

<input type="checkbox"/>	References/Bibliography
<input type="checkbox"/>	Relevant engineering drawings
<input type="checkbox"/>	Appointed Environmental Consultants' CVs, portfolio of Project experience, etc
<input type="checkbox"/>	Project Owner's Dubai License (for private companies)

Quality of Submission

	Inclusive of all above requested information for the Competent Authority to reach a clear understanding of the Project's:
<input type="checkbox"/>	• Significant impacts
<input type="checkbox"/>	• Recommended measures and monitoring programmes
<input type="checkbox"/>	• Roles and responsibilities and commitments
<input type="checkbox"/>	Compliant with the EIAS Guidance in contents and structure
<input type="checkbox"/>	Clarity of written language and submission of a complete document
<input type="checkbox"/>	Clarity of graphics, text and tables

DATE

NAME OF ENVIRONMENTAL CONSULTANCY

STAMP AND SIGNATURE

Classification: SHARED – CONFIDENTIAL

Annex 4

Guidance on Environmental Baseline Surveys and Numerical Modelling

Annex 4

Part 1

**Guidance on the Requirements for
Air, Noise, Odour Baseline Survey & Modelling
and Separation Distance**

Guidance on the Requirements for Air, Noise, Odour Baseline Survey & Modelling, and Separation Distance

Air Quality and Odour Baseline Survey

1. Air quality and odour baseline measurement shall be carried out following international best practices or standard methods established by recognised international bodies.
2. Only laboratories accredited by the EIAC for the particular task and parameters shall be engaged for air and odour baseline measurement.
3. Detection limits of instruments, analysers or internationally accepted methods shall be below corresponding statutory or adopted allowable limits of pollutants in ambient air and odour to allow suitable assessment (Refer to Table 3).
4. Existing weather and air quality information in the proximity of the site must be screened and reviewed to obtain representative data using appropriate and acceptable instruments.
5. Baseline measurement shall consider the following criteria:
 - a. Measurement shall be done at upwind, downwind and crosswind of emission sources;
 - b. Measurement shall be done at the fenceline or close to the boundary of the sensitive receptors that are likely to be impacted; and
 - c. The duration of measurement shall be based on the respective statutory averaging time (hourly, daily, 8-hour) of each parameter.
6. A minimum of three (3) survey locations from the upwind, downwind and crosswind of the prevailing wind direction is required. Depending on the Project (i.e. type of emission, magnitude of emission, Project footprint, sensitivity of the area, etc.), however, additional number of locations may be required to cover variable wind directions and sensitive receptors.
7. The minimum required parameters to be measured and corresponding averaging period for each Project type are presented in Table 1 and Table 2. Additional parameters and longer survey period may be required depending on the scope of the proposed Project, the type and magnitude of emissions, the sensitivity of the nearby receptors, and any atmospheric dispersion modelling requirement.
8. All relevant data including temperature, wind speed, wind directions, site conditions and activities, nearby emissions sources shall be recorded throughout the baseline survey period and shall be appended in the EIAR/EIAS.
9. Survey should be done under typical or normal weather conditions (i.e. not during dust storm events). Any data (i.e. PM and TSP) measured at wind speeds of more than 5 m/s shall be invalidated.
10. Results must be reported at the same averaging time of the relevant limits.
11. A Quality Assurance/Quality Control (QA/QC) program must be in place that covers equipment maintenance; calibration; sample handling, storage and transport; and data verification.

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Noise Measurement

1. Noise measurement shall be carried out following international best practices or standard methods established by recognised international bodies.
2. Noise measurement must be undertaken with the following considerations:
 - a. Noise measurement must be undertaken employing a Class 1 sound level meter. The sound level meter must be calibrated at least 2 years by a calibration laboratory and field performance shall be checked with a portable sound level calibrator before and after each measurement.

- b. The measurement should be taken outdoor or inside affected property. The sound level meter should be at least 1.2 - 1.5 meters above the ground, floor or building and should be no less than 3.5 meters from any reflective surface such as walls or buildings. When it is not possible to locate at 3.5 meters, the preferred position shall be more than 1-meter from any reflective wall.
 - c. Where measurement is made inside any habitable room of the noise affected residential premises and a window or door is the major transmission path for the noise, measurements shall be taken with the window or door fully opened and fully closed to obtain an estimate of noise level difference.
3. Survey locations shall be chosen based on the following criteria:
- a. Location of existing or future noise sources;
 - b. Background noise which is not much influenced by emission sources; and
 - c. Topography between noise sources and noise sensitive receivers.
4. Unless otherwise specified in Table 1 and Table 2, a minimum of four (4) survey locations and 15-minute measurement period in each location are required during daytime and nighttime, weekdays and weekend. The minimum 15-minute averaging time is applicable only for constant noise levels. In case of erratic, impulse and other types of noise, the measurement time shall be prolonged for a minimum of 12 hours during daytime and nighttime. Additional survey locations and longer measurement interval may be required depending on the nature and characteristic of noise emissions (e.g. type, time of occurrence, the sensitivity of the surrounding receptors, and any noise modelling requirement).
5. Noise survey should be carried out on a day with calm to gentle breeze represented by wind speeds not more than 5 m/s. In case of highwinds, the microphone shall be protected with windscreen.
6. All relevant data including wind speed, site activities, and noise sources shall be recorded throughout the baseline survey period and shall be appended in the EIAR/EIAS.
7. Noise levels shall be reported as A-weighting and equivalent continuous sound level (L_{eq}) to assess compliance with the Federal allowable limits including L_{max} , L_{min} , L_5 , L_{95} , L_{90} for source noise and background assessment.
8. A Quality Assurance/Quality Control (QA/QC) program must be in place that covers equipment maintenance, calibration, and data verification.



Table 1: Minimum Baseline Air and Noise Survey, and Modelling Requirements for EIAR

Projects of Natural Resources of Fossil Origin						
Exploration and extraction projects, manufacturing and re-manufacturing, storage, and transport and selling of oil and gas, and all it is derivatives (like benzene, diesel, oils & grease, as example but not as a limitation) including the related equipment and facilities						
Reverse osmosis (RO) plant (With abstraction of saline groundwater or coastal aquifer, and/or discharge to soil and/or pumping into the aquifer)	For waste-to-energy: NO _x , SO ₂ , CO, O ₃ , PM ₁₀ , TSP, Metals (Cd, Hg, As, Cr, Cu, Pb, Mn, Ni), Acid Gases (HCl, HF), VOC, Dioxins/Furans (7- day continuous)					
Projects for the use of underground water resources including exploration, extraction, transportation, manufacture, storage and injection, and the related facilities and equipment used						

Marine Projects and Marine Transportation						
Ports, opening and deepening the marine channels, bridges and marine tunnels, marine projects or that require marine drilling or reclamation	Development of a new harbour(s) or terminal(s) or marina or modification of an existing harbour or marina in coastal zone (including rock works, capital dredging or excavation, quay walls, reclamation)					
	Development of promenade or new marina or modification of existing marina in Creek or waterways (including floating pontoons with mooring systems, piles supporting platforms, quay walls, revetment) With any reclamation or encroachment into the sea or waterways					
Establishing any kind of activities and facilities on the islands and the coasts including the filling of the coasts and the edges of the islands	Effluent-discharging outfalls (thermal discharge, brine, hypersaline water, recycled water, storm water or groundwater, etc.) and Storm water or groundwater with discharge rates greater than 2.0-m ³ /sec	x	x	x	x	x
	Coastal stabilization (including revetment, groynes, breakwaters, seawalls, artificial reefs, beach reclamation, dredging, etc.)	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
	Development of an artificial island(s) or peninsulas (land reclamation, beaches, rock works, and quay walls)	PM ₁₀ , TSP (7-day continuous)	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
	Sub-marine pipelines	x	x	x	x	x
	Offshore capital dredging and/or disposal (sand dredging from borrow areas, disposal of dredged material)	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
	Temporary or permanent causeway(s) (including rock works, reclamation)	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
Sewage/rainwater lines	Sewer lines (With discharge to the sea or waterways or with sewage pumping stations)	x	Reduced Sulphur compounds (H ₂ S, methyl mercaptans, DMS, DMDS), NH ₃ (24-hr continuous)	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	Odour modelling ^{a, c}
	Drainage or storm water/rainwater lines (With discharge to the sea or waterways)	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
Drinking water/ cooling lines	Drinking water lines [Located inside or near (within 1 km) a protected or environmentally sensitive areas]	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
	Cooling lines [Located inside or near (within 1 km) a protected or environmentally sensitive areas]	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
Gas/ Oil lines	Onshore pipelines for the transport of oil, natural gas or petrochemical products (In new oilfield or pipeline corridor)	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
Irrigation networks	Irrigation networks [With discharge to the sea or waterways or located inside or near (within 1 km) a protected or environmentally sensitive areas]	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
Overhead power transmission lines	High voltage overhead power transmission lines [Located inside or near (within 1 km) a protected or environmentally sensitive areas]	x	x	x	✓	x
Ground cables	Ground cables [Located inside or near (within 1 km) a protected or environmentally sensitive areas]	x	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x

	Utilities or service lines within the right of the way [Located inside or near (within 1 km) a protected or environmentally sensitive areas]					
	Cooling plants (With intake or outfall pipelines in the sea or waterways, or with RO that discharges to the ground/soil or into the groundwater/aquifer)					
Projects Related to Wastes						
Projects of waste disposal (Regardless of the method used, dumping or incineration or others), whether the waste is solid or semi- solid or gases, hazardous or non- hazardous, municipal or industrial or medical including sites, facilities, equipment and transportation related to them		NOx, SO ₂ , CO, O ₃ , PM ₁₀ , TSP, Metals (Cd, Tl, Hg, Sb, As, Cr, Co, Cu, Pb, Mn, Ni, Sn, V), Acid Gases (HCl, HF), VOC, Dioxins/ Furans (7-day continuous)				
Projects of waste handling (Regardless of the method used, dumping or incineration or others), whether the waste is solid or semi- solid or gases, hazardous or non- hazardous, municipal or industrial or medical including sites, facilities, equipment and transportation related to them		For hazardous and medical waste incineration: NOx, SO ₂ , CO, O ₃ , PM ₁₀ , TSP, Metals (Cd, Tl, Hg, Sb, As, Cr, Co, Cu, Pb, Mn, Ni, Sn, V), Acid Gases (HCl, HF), VOC, Dioxins/ Furans (7-day continuous)				
Development Projects Related to Residential and Industrial Areas						
	New residential, commercial or mixed-use community development on the coast [Adjacent or within 100-m from a beach, with permanent discharge to the sea or waterways, or building(s) regardless of height with a marina component]					
	New horizontal residential, commercial or mixed-use community development not on the coast [With permanent discharge to the sea or waterways or located inside or near (within 1 km) a protected or environmentally sensitive areas]	NO _x , SO ₂ , CO, O ₃ , PM ₁₀ , TSP (24-hr continuous)	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x

New vertical residential, commercial or mixed-use community development not on the coast [Located inside or near (within 1 km) a protected or environmentally sensitive areas, or with permanent discharge to the sea or waterways]

Industrial estates, park, city or complex (Adjacent or within 100-m from a mean sea level shoreline, with water intake or permanent outfall to the sea or waterways, or with marina component)

Projects of Special Nature

Project that is expected to alter the entertainment, recreational and service nature of the surrounding areas [Located inside or near (within 1 km) a protected or environmentally sensitive areas]

With fossil fuel combustion source:
NO_x, SO₂, CO, O₃ With incinerator: NO_x, SO₂, CO, O₃, PM₁₀, TSP, Metals (Cd, Ti, Hg, Sb, As, Cr, Co, Cu, Pb, Mn, Ni, Sn, V), Acid Gases (HCl, HF), VOC, Dioxins/Furans (24-hr continuous)

NO_x, SO₂, CO, O₃, PM₁₀, TSP, Metals (Cd, Ti, Hg, Sb, As, Cr, Co, Cu, Pb, Mn, Ni, Sn, V), Acid Gases (HCl, HF), VOC, Dioxins/Furans (7-day continuous)

x

If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night

x

Air dispersion modelling^A

Notes:

- NSR - Noise Sensitive Receivers
- ^A - Air or odour dispersion modelling should be undertaken employing AERMOD or CALPUFF model, preferably BREEZE software. All modeling native files should be provided with the EIA submission in a format compatible with BREEZE.
- ^B - Noise modelling should be undertaken employing SoundPLAN model.
- ^C - Modelling will be required depending on the sensitivity of the Project location in relation to affected receptors.
- The AESEAS reserves the right to include / exclude any of the above requirements on case-by-case basis.

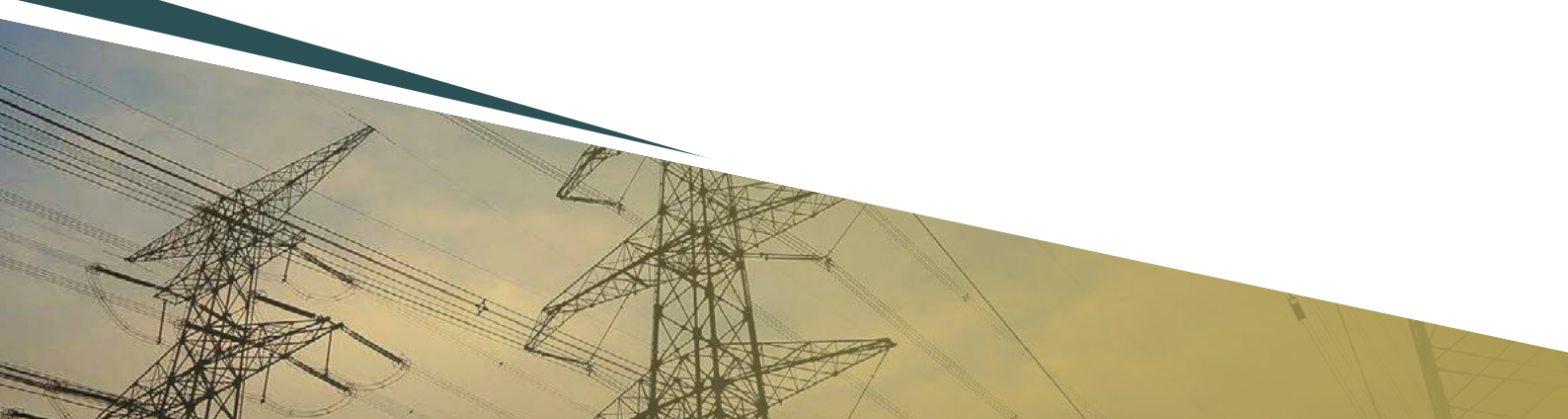


Table 2: Minimum Baseline Air and Noise Survey, and Modelling Requirements for EIAS

Projects of Natural Resources of Fossil Origin						
Exploration and extraction projects, manufacturing and re-manufacturing, storage, and transport and selling of oil and gas, and all its derivatives (like benzene, diesel, oils & grease, as example but not as a limitation) including the related equipment and facilities						
Ports, opening and deepening the marine channels, bridges and marine tunnels, marine projects or that require marine drilling or reclamation	Development of promenade or new marina or modification of existing marina in Creek or waterways (including floating pontoons with mooring systems, piles supporting platforms, quay walls, revetment) - Without any reclamation or encroachment into the sea or waterways Modification of existing marina in the coastal zone (including replacement or repairs to existing floating pontoons and mooring system) - More than 10 no. of berths or slips or without any rock works, dredging or reclamation					
Establishing any kind of activities and facilities on the islands and the coasts including the filling of the coasts and the edges of the islands						
	New residential, commercial or mixed-use community development on the coast [With closed man-made lagoons, without permanent discharge to the sea or waterways, or without coastal component (e.g. beach is developed by others)] New horizontal residential, commercial or mixed-use community development not on the coast (With closed man-made lagoons or without water intake or permanent outfall to the sea or waterways) New vertical residential, commercial or mixed-use community development not on the coast (With closed man-made lagoons or without water intake or permanent outfall to the sea or waterways) Industrial estates, park, city or complex (With closed man-made lagoons or without water intake or permanent outfall to the sea or waterways)	NOx, SO ₂ , CO, O ₃ , PM ₁₀ , TSP (24-hr continuous)	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x
Projects that expected to affect heritage, history, entertainment, scientific, cultural and service nature located around them	Golf course (New and without water discharges to the sea or waterways, or with closed man-made lagoons)	NOx, SO ₂ , CO, O ₃ , PM ₁₀ , TSP (24-hr continuous)	x	If NSR is present within 300 m from plot boundary: At least 15-min measurement period over day and night	x	x

Notes:

- NSR - Noise Sensitive Receivers
- SR - Sensitive Receptor
- The AESEAS reserves the right to include / exclude any of the above requirements on case-by-case basis.

Table 3: Reference Standards

Parameter	Reference Standards
SO ₂ , CO, NO ₂ , O ₃ , TSP, PM ₁₀ , Pb	Ambient Air Quality Standards, UAE Cabinet Decree No. (12) of 2006 Concerning the Protection of Air from Pollution
H ₂ S	WHO Air Quality Guideline (7 µg/m ³ , 30-min averaging time)
NH ₃	US NIH (30 µg/m ³ , 30-min averaging time)
All other air parameters	Ontario's Ambient Air Quality Criteria
Noise	Allowable Limits for Noise Level in Different Areas, UAE Cabinet Decree No. (12) of 2006 Concerning the Protection of Air from Pollution
EMF	International Commission on Non-Ionizing Radiation Protection (ICNIRP, refer to Annex 5 for the Technical Guideline on Electromagnetic Fields)

Recommended Separation Distance

Any Project that is likely to be affected by activities that create or are potential to create significant adverse impacts (e.g. EMF, odour) must be sited on appropriate location according to the applicable land use zoning regulations and with adequate buffer or separation distance. The sensitivity of the receptors at the Project from either existing or planned activity, should be taken into consideration when providing suitable buffer or separation distance. The types, sensitivity, and description of sensitive receptors are provided in Table 4.

Table 4 – Description and Features of Sensitive Receptors Area

Sensitivity and (Type of Area)	Description and Features of the Receptors Area
High (Type 1 Area)	<ul style="list-style-type: none"> Protected areas for conservation of national or international importance Water supply reserves Hospitals and school premises High density residential block (according to land use classification), town center
Moderate (Type 2 Area)	<ul style="list-style-type: none"> Vital utilities such as electricity and energy sources, natural wealth reserves, and state-protected economic zones Light density residential blocks (according to land use classification), public parks Natural body of water Place of cultural heritage
Light (Type 3 Area)	<ul style="list-style-type: none"> Commercial buildings, offices, and other public areas Food products manufacturing premises Agricultural crops farmland
Marginal (Type 4 Area)	<ul style="list-style-type: none"> Industrial Animal farmland but without dairy or meat food products processing

The provision of adequate buffer or separation distance will not only minimise the impact on sensitive receptors within a proposed Project, but most importantly, pre-empts any future conflicts that may arise due to harmful effects of electromagnetic field (EMF), noise, malodour, and other emissions and/or harmful discharges to the environment. Any Project that will be located near facilities that generate odour or EMF emissions is recommended to provide a buffer or separation distance in accordance with the local and international best practices. The assessment on the provision of buffer zone or separation distance should be integrated with the air impact assessment in the EIA study.

Annex 4

Part 2

Guidance on Coastal and Marine Numerical Model Simulations for Quantitative EIA Studies

Guidance on Coastal and Marine Numerical Model Simulations for Quantitative EIA Studies

These guidelines set the requirements for scoping and undertaking coastal model simulation studies in support of quantitative EIA studies, and presenting the results in an EIAR. Their purpose, therefore, is to serve as a reference for the Consultant to the expectations of DM-ESD on the data requirements, contents, calibration and deliverables of coastal model simulations.

If it becomes necessary to deviate from or omit part(s) of the requirements, a detailed explanation and justification on the integrity of the results and their significance for the quantitative impact prediction for the EIA study shall be provided in the modelling study report and in the relevant section within the EIAR.

The approach to the coastal modelling study shall at the very least follow the guidance specified in Sections 1.1 – 1.6 that follow.

1.1 Coastal Modelling Study Objectives

The objectives of applying coastal modelling in an EIA study shall be stated clearly including the scope of modelling and the intended use of the modelling output. It shall include a brief description of the site, the coastal system, the Project and the potential effects of the Project on the coastal system.

1.2 Selection of the Model(s)

The suitability of the model(s) chosen for the intended purpose shall be justified by the Consultant with technical description of the model(s).

The model configuration(s) shall be presented, including model domain, resolution and dimensionality. In case stratification is anticipated in the Project area, either naturally existing or caused by the Project, 3D model(s) shall be used; otherwise alternatives shall be justified.

Table 4-1 presents a matrix of type of model(s) required for coastal/marine Projects. Table 4-2 summarises general considerations for coastal model simulations to be followed. Notwithstanding these two tables, it shall be noted that DM will review and approve numerical modelling studies on a case-by-case basis with consideration on the nature and size of the proposed Project and its proximity to sensitive receptors of the natural and built environment.

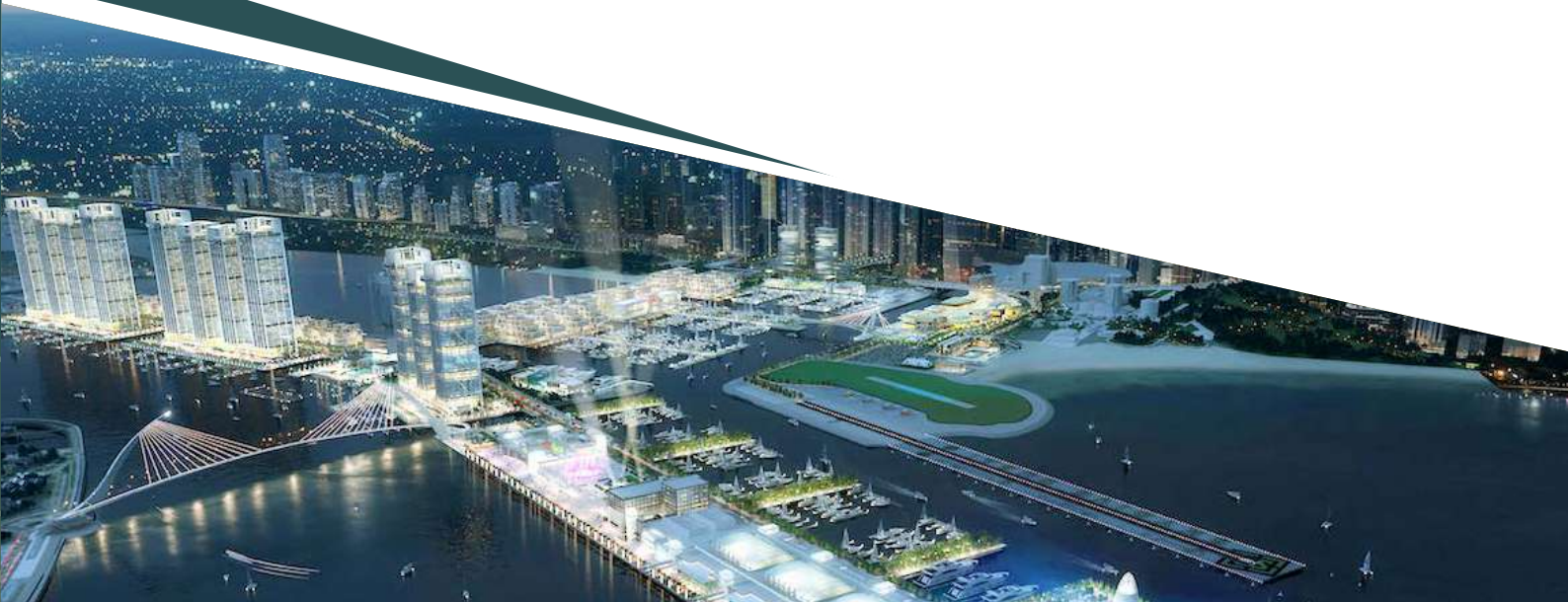


Table 4-1: EIA - Modelling Study Requirements for Coastal/Marine Projects

Description of Projects	Scope of Works of Project	Hydrodynamics	Flushing / Tracer Dispersion	Initial Dilution Analysis
Development of an artificial island(s) or peninsulas	Land reclamation, beaches, rock works, and quay walls	✓	✓	✗
Development of a new harbour(s) / terminal(s) / marina or modification of an existing harbour / marina in coastal zone	Rock works, dredging / excavation, quay walls & floating pontoons, reclamation	✓	✓	✗
Development of artificial canals connected to the Creek/sea/ existing waterways	Excavation / dredging, retaining walls	✓	✓	✗
Coastal stabilisation	Revetment, groynes, detached breakwaters, beach nourishment, dredging etc.	✓ (in case of any nearby existing harbours, outfalls, canal / creek entrance, sensitive marine habitat, etc.)	✓ (in case of any nearby existing harbours, outfalls, canal / creek entrance, etc.)	✗
Effluent discharging outfalls	Open channel outfall: Thermal discharge, brine, hypersaline water, etc.	✓	✓ (if discharged in semi-enclosed waterbodies)	✓
	Pipe outfalls: Thermal discharge, brine, hypersaline water, etc.	✓	✓ (if discharged in semi-enclosed waterbodies)	✓
	Recycled water	✓	✓	✓
	Storm water / groundwater (rate of discharge > 2.0 cu.m / s)	✓	✓ (if discharged in semi-enclosed waterbodies)	✓
Development of promenade, new marina or modifications of existing marina in Creek / waterways	Floating pontoons with mooring systems, piles supporting platforms, quay walls, revetment			
Temporary / permanent causeway(s)	Rock works, reclamation	✓	✓	✗
Bridge(s) over marine water	Bridges/piers	✓	✗	✗
Offshore dredging and/or disposal	Sand dredging from borrow areas, disposal of dredged material	✓	✗	✗



Plume Dispersion	Water Quality	Wave Transformation	Wave Disturbance	Shoreline Evolution	Sediment Transport / Morphology	Oil Spill
✓	✗	✓	✓	✓	✗	✗
✓	✗	✓	✓	✓	✓ (for approach channel and turning basin)	✓ (for terminal with re-fuel facility)
✗	✓ (depending on proximity to sensitive receptors, e.g. Desalination intakes, Ras Al Khor Sanctuary & Recycled water outfall)	✓ (if connected to the sea)	✗	✓ (if connected to the sea)	✗	✗
✓ (in case of dredging and/or nourishment)	✗	✓	✗	✓	✗	✗
✓	✓ (for water quality parameters may be impacted)	✓	✗	✓	✗	✗
✓	✓ (for water quality parameters may be impacted)	✗	✗	✗	✗	✗
✗	✓	✗	✗	✗	✗	✗
✓	✓ (if located close to sensitive receptors like intakes, fish farms, etc.)	✗	✗	✗	✗	✗

Numerical modelling studies are not required if no reclamation / encroachments into the waterways.

✓	✗	✓	✗	✓	✗	✗
✗	✗	✗	✗	✗	✗	✗
✓	✗	✗	✗	✗	✓	✗



NOTE: The CESS reserves the right to include / exclude any of the above studies on case-by-case basis.

Table 4-2: Model Information Required in the Coastal Modelling Study Report

Type of Model	Processes to be Modelled	Model Configurations
Hydrodynamics	<p>The hydrodynamic model is applied for simulating surface elevation and currents, as well as temperature and salinity. It provides the flow and dispersion data for other models such as plume dispersion, sediment transport, oil spill and water quality. It often serves as a core in the coastal modelling for EIA. The driving forces of the coastal hydrodynamics that should be included in the modelling are:</p> <ul style="list-style-type: none"> □ Tides: As a minimum, hydrodynamic modelling should be conducted for a spring-neap tidal cycle; □ Meteorological Forces: Wind and atmospheric pressure should be included in the model, if it is deemed important, such as for plume dispersion studies where the discharge pollutant(s) could be drifted to receptors (such as intakes) faster than in calm weather. The Study Report should state whether typical or extreme conditions will be studied, how the seasonal variation will be investigated; □ Density: In the vicinities of existing and future outfalls, that discharge effluent with a density significantly different from the ambient seawater, baroclinic effect should be included. For the Projects that could potentially impact the water quality in the Dubai Creek, discharges from sewage treatment plants and storm water outfalls and precipitation, that influence the salinity, should be included. The Study Report should state whether and how the temperature and salinity will be modelled and clearly explain which data (available or new) to support the modelling study; □ Waves: The Study Report shall justify if the wave effect on hydrodynamics should be considered, such as radiation stress on near-shore currents. 	<ul style="list-style-type: none"> □ Dimensionality: The model dimensionality should be determined with the knowledge of dynamic processes in the model area. For Projects where water density variation is significant, such as in the Creek and in the vicinities of outfalls, 3D model should be applied unless the Consultant justifies it is appropriate not to; □ Model Domain: The model domain should be large enough so that the open boundaries of the model will have negligible effects on the model results. As a rule of thumb, the open boundaries shall be at least one tidal excursion away from the Project site and areas of interest so that the water in the area of interest will not leave the model domain in a single tidal cycle. Consideration should also be given to data availability for specifying the open boundary input and for calibrating and validating the model; □ Model Resolution: The model resolution should be high enough to resolve shoreline and development shapes, bathymetric features such as rapid change in bed level, dredged channel(s), and anticipated dimension and gradient of the intended modelling processes such as eddies and plume dimension. For water channels, at least 3 elements/ grids should be planned across the channel. This rule of thumb also applies to dredged channel(s). The principle is that the cross sections and its temporal variation should be reproduced by the model. For 3D model, the number of layers should be sufficient to resolve the stratification. As a minimum, 5 layers should be defined;
Flushing / Tracer Dispersion	<p>Flushing modelling should be conducted, if an (semi-) enclosed area(s) will be formed by the development or the development may have potential impact on an existing (semi-) enclosed area(s), to simulate water exchange between the internal basin(s) and its surrounding water body (i.e. flushing) for assessing the potential for adverse negative impacts on the water retention time within a semi enclosed area and obtain an indication of potential for water quality deterioration.</p> <p>Classically flushing study is conducted by simulating conservative tracer initially distributed in the (semi-) enclosed basin. Other methods may also be applied with adequate technical justification. The flushing criteria/guidelines adopted for the assessment should be stated in the Study Report with references.</p>	<ul style="list-style-type: none"> □ Area(s) to Be Assessed: The area to be modelled should be defined with clear rationality. In principle, the water outside that area to be assessed should be relatively more open and is less susceptible to water quality changes. □ Model Resolution: The model resolution should be fine enough that it will not influence the results, especially in the area where direct water exchange occurs, such as within one tidal excursion of the boundary of the inner and outer basin. The tracer plume should be resolved with sufficient spatial resolution. □ Model Warm-up: The hydrodynamic model should be warmed up before the flushing simulation starts. □ Starting Time: The flushing simulation starting time should be chosen to be representative and/or conservative for the assessment. Sensitivity tests should be conducted for assurance of appropriate simulation starting time. □ Simulating Time: The flushing simulation should be performed to a time that 90% of the initially distributed tracer is flushed out of the basin.
Initial Dilution Analysis / Near-field Modelling	<p>For outfalls and offshore disposal, initial dilution analysis / near-field modelling should be conducted for compliance assessment with regulatory and/or best practice guidelines, and for characterising the mixing in the near-field where the initial jet characteristics of momentum flux, buoyancy flux, and outfall geometry influence the jet trajectory and mixing.</p>	<ul style="list-style-type: none"> □ Outfall Configurations / Placement Methodology: The design basis of the chosen outfall scheme/disposal methodology should be described; □ Effluent Characters: The flow / disposal rates and water quality properties of the effluent for modelling should be representative for the range of discharge with reference to Regulatory Standard (Local Order No. 61 of 1991) & Appendix 1 and Appendix 2 of Annex 4 Part 2; □ Ambient Conditions: receiving water conditions should be representative, including the range of water levels, ambient currents, depth, density and stratification, and their seasonal variation.
Plume Dispersion / Far-field Modelling	<p>Plume dispersion / far-field modelling is required where there are sensitive receptors in the vicinity of the Project site, and it should be conducted for delineating the zones of influence of discharges (outfalls, dredging and placement/disposal, etc.). Consideration should be given to non-conservative parameters, including:</p> <ul style="list-style-type: none"> □ Bacteria Decay: the parameters should be representative to the site condition; □ Heat Exchange: with air for thermal discharges if it is deemed significant to the assessment; □ Settling: settling should be included for suspended sediment and substances adhered to suspended sediment. 	<ul style="list-style-type: none"> □ Advection-Dispersion Model: The model resolution within the zone of influence should be sufficient to resolve the plumes; □ Particle Model: The number of particles should be sufficient for statistical accuracy. □ Parameters: The parameters should be site specific, such as the bacteria decay rate and sediment settling velocity. □ Sourcing: the source strength adopted in the modelling should be rationalised based on the operational conditions.

Type of Model	Processes to be Modelled	Model Configurations
Water Quality	<p>WQ modelling should be conducted for assessing the compliance with Local Order No. 61 of 1991 & Appendix 1 and Appendix 2 of Annex 4 Part 2. The model should also be able to assess, where required, potential adverse negative impact on water intakes for uses that may affect human health and/or the ecosystem at large. The WQ model should include:</p> <ul style="list-style-type: none"> □ Physical, Chemical and Ecological parameters and their interactive processes: the model should be able to simulate major processes that influence the concerned water quality, such as introducing nutrients or altering the site condition or configuration encouraging those processes potentially leading to algal blooms. The concentrations of the model input parameters should be representative for the site specific conditions/ambient concentrations; □ External Factors: the model should include external factors such as solar radiation, expected parameter concentrations of an effluent discharge loadings. Seasonal differences should also need to be reflected 	<p>In Dubai coastal waters, particular concerns are:</p> <ul style="list-style-type: none"> □ Deficiency of Dissolved Oxygen: especially in Dubai Creek; □ Algal Bloom: in Dubai coastal water and Dubai Creek; □ Elevated Nutrient Concentrations: Dubai Creek; □ Toxic Substances: to the desalination plant intakes. <p>The model should be representative of the existing water quality condition, discharges and intakes, typical and seasonal variation of discharges and ambient conditions. The model should be calibrated and validated for the existing/historical conditions, and allow for seasonality differences in certain water quality parameters.</p>
Wave Climate / Wave Transformation	<p>For EIA, the main purpose of wave modelling is to assess the changes in wave conditions due to the Project, which may have consequences in shoreline stability, beach sand quality and siltation in the vicinities of the Project site.</p> <p>The wave model should be able to simulate the growth, decay and transformation of wind-generated waves and swell in offshore and coastal areas.</p>	<ul style="list-style-type: none"> □ Model Domain and Spatial Resolution: The model domain should be planned with consideration of availability of wave data. The model should be configured to represent bathymetry, shoreline and structures; □ Spectral Method: Choice of full spectral or directionally decoupled should be justified. Directional and frequency resolutions should be determined with knowledge of the site condition; □ Stationary or Instationary: choose according to the importance of growth, decay and transformation of wind-generated waves □ Forces: Main forces that influence the waves in the area of interest, such as offshore waves, winds and water levels, should be identified and considered in the modelling. □ Climate Change: In case needed, the impact of climate change, in terms of sea level rise and/or storm intensification, should be assessed.
Boussinesq Wave Modelling / Wave Disturbance	<p>Where wave diffraction is important, Boussinesq type of model should be applied</p>	<ul style="list-style-type: none"> □ Model Domain and Grid Orientation: should be planned with consideration of incoming waves to be modelled; □ Model Resolution: should be specified with consideration of wave characteristics to be modeled and wave transformation processes included in the simulation; □ Model Setup: The model setup planner should be presented for MIKE BW application. Rationality and summary of model setup should be presented for other software. □ Structures: The hydrodynamic characteristics of coastal structures and the parameters representing them should be documented. □ Model Warm-up and Simulation Time: The model should be warm-up to minimise/eliminate the influence of initial condition on results that to be used for analysis. The time period of useful simulation should be sufficiently long that stable statistical results could be obtained.
Longshore and cross-shore sediment transport modelling	<p>For a Project that interrupts littoral transport and/or has potential impact on shoreline stability, littoral transport and/or shoreline evolution modelling should be conducted to assess:</p> <ul style="list-style-type: none"> □ Littoral drift, sediment budget, and changes due to the Project; □ Equilibrium shoreline orientation and changes due to the Project; □ Shoreline evolution: prediction of shoreline accretion/erosion. Assessment of risk to structures, navigation and water exchange, and tidal inland water bodies protected by narrow beach or spit; □ Beach profile morphology in response to storm events and the risk of shoreline protection structures. 	<ul style="list-style-type: none"> □ Shore Profiles: The shore profiles should be representative for the site or intended design. The number of the profiles should be sufficient to represent the variation of shore profiles and sediment characteristics in the Project area. The cross-shore profile should be perpendicular to the shore and or the depth contours. The profiles should have an extension so that the wave-driven longshore currents and sediment transport are insignificant in the first grid point; □ Wave Climate Statistics and Storm Waves: The wave climate input should be site specific and include seasonal variation. The number of wave climate locations should be sufficient to represent the spatial variation of the wave conditions within the Project site. For storm process studies, rationality of storm event selection (including storm duration) should be justified. □ Water Levels: Water level variation should be considered in the modelling in case of necessary. The importance of Sea Level Rise should be evaluated; □ Currents: The importance of tidal currents and regional circulation should be evaluated for justifying if they should be included in the sediment transport modelling; □ Sediment Characteristics: Site specific or design specified sediment parameters should be used in the model.

Type of Model	Processes to be Modelled	Model Configurations
Sediment Transport / Morphology	<p>For dredging and disposal Projects that alter the bathymetry, and for Projects that may change hydrodynamic regime in sensitive areas, and for assessing the stability of material placed on sea bed, sediment transport / morphological modelling should be conducted to assess the siltation/erosion and/or morphological changes.</p> <p>The Study Report should justify the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Cohesive or non-cohesive sediment; <input type="checkbox"/> Currents and/or waves driven processes; <input type="checkbox"/> Feedback of morphological/bathymetric changes to sediment transport; <input type="checkbox"/> 1D cross-sectional or 2D simulations. 	<ul style="list-style-type: none"> <input type="checkbox"/> Model Resolution: The resolution of sediment transport model and the hydrodynamic and/or wave models, should be sufficiently fine to represent the dynamic and morphological gradients; <input type="checkbox"/> Sediment Characteristics: Site-specific sediment properties should be used in the model. The availability and/or erodibility of sediment on the sea bed should be considered in the model; <input type="checkbox"/> Bed Slope Effects: The calculation of sediment transport should include the slope effect where it is significant. <input type="checkbox"/> Wave Effects: The importance of waves to the sediment transport processes should be evaluated for determining if it should be included in the modelling or not. <input type="checkbox"/> Storm Events: The study should assess if the sediment transport processes are dominated by storm events or by the climate conditions. <input type="checkbox"/> Parameters: key model parameters should be presented with backup references.
Oil Spill	<p>Oil spill risk assessment should be conducted for Projects with oil/refuel terminal(s) and/or risk of oil spill.</p> <p>The oil spill model should consider oil slick moves due to the inherent spreading of the oil, currents, winds and waves and its fates, including natural dispersion, emulsification and weathering.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Probability: The study should analyse the probability of spill, possible rate/duration/volume of release(s); <input type="checkbox"/> Deterministic or Stochastic: The study should rationalise the modelling methodology. In principal, a stochastic modelling is required for EIA. <input type="checkbox"/> Oil properties: Oil properties adopted for the modelling should be documented and backed up with information/references. <input type="checkbox"/> Modelling Scenarios: The modelling scenarios should reflect the types of incidents and site conditions and its seasonal variations. <input type="checkbox"/> Outputs: The impact to both aquatic environment and to the shoreline should be assessed.

1.3 Data Needs and Acquisition

Data required for the modelling studies must be clearly defined in the modelling study report that will be appended to the EIAR as a Technical Annex. In general, the data input to the coastal model studies shall include, but not be limited to, the following:

- Data for model setup: bathymetry/topography, shoreline, development and construction plans, sediment characteristics.
- Data driving the models: boundary inputs, meteorological forces (wind, atmospheric pressure, air temperature, radiation), discharges, and initial conditions.
- Data for model calibration and validation: Water level, current speed and direction, water temperature and salinity, dye dispersion, measured water quality parameters, measured waves, shoreline and morphological data, etc.

The sources, temporal and spatial coverage of the available data shall be documented. The appropriateness of available data for the modelling study and potential influence to the modelling study quality shall be assessed and this shall be clearly reported in the main modelling study report that will be appended to the EIAR as well as in the relevant section within EIAR.

Data gap(s) shall be filled in before carrying out the model simulation study. Not complying with this requirement may affect the EIA conclusions and jeopardise the EC issuance.

1.4 Model Calibration and Validation

The approach to undertaking the model calibration and validation including the standards/criteria to be followed and data to be used shall be clearly documented in the report of the modelling study.

Calibration and validation processes are essential for the model development. Both procedures make use of measured field data to compare with the model results. This is required to demonstrate confidence in the model performance so that robust and reliable conclusions can be drawn from the results.

Calibration is to be conducted during the development of the model, with the ultimate goal of producing a model, which provides a realistic representation of the coastal processes within the study area. Model configuration, parameters and forcing data could be adjusted in reasonable ranges. The adjustment and rationale shall be clearly explained and justified and reported in the main modelling study report. Sensitivity analysis shall be

performed to investigate the effect on the key output parameters resulting from variation of input data and model parameters.

Once the model calibration is successful, model validation shall be carried out, using the model setup and parameters to produce the best model 'fit' during calibration, against an independent data.

The calibration and validation results could be assessed in two ways:

1. Visual comparison of the model output against measured data: the shape, regression trend, range and limits of model output and measured data by inspecting time series plots and/or scatter diagram.
2. Statistical compliance analysis between the measured data and the model results, to determine the percentage that the model fits the measured data within defined limits, e.g. 90% of the model predictions are within 0.1 units or 10% of the observed value and or other statistical measures (e.g. bias, root mean square error, correlation, etc.).

As a best practice, both methods should be used. A single method may not provide a full assessment of model performance.

The hydrodynamic model usually serves as the core of the coastal modelling studies and for this reason it shall be calibrated and validated against both water levels and currents, as well as temperature and salinity in case of a baroclinic model. For 3D hydrodynamic model, calibration and validation against measured currents shall be carried out across the water column, i.e., at surface, mid-depth and near-seabed. For tidal model(s), the non-tidal components shall be removed from the measurement for comparison with the simulated tides.

For hydrodynamic model calibration and validation, DM recommends the guidelines set out in the Foundation for Water Research (FWR) document 'A Framework for Marine and Estuarine Model Specification in the UK' (FWR, 1993) that recommends quantitative model performance criteria as summarised Table 4-3.

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Table 4-3: Guidelines of Hydrodynamic Model Performance Criteria

Parameter	Tolerance Applied			
	Coastal		Estuarine/Creek	
	Absolute	Relative	Absolute	Relative
Water Level	+/- 0.1m	10% of Spring tidal ranges 15% of Neap tidal ranges	+/- 0.1m at mouth +/- 0.3m at head	15% of Spring tidal ranges 20% of Neap tidal ranges
Current Speed	+/- 0.1m/s	+/- 10-20% of observed speed	+/- 0.2m/s	+/- 10-20% of observed speed
Current Direction	+/- 20 degrees	N/A	+/- 20 degrees	N/A
High Water Phase	+/- 15mins	N/A	+/- 15mins at mouth +/- 25mins at head	N/A
Temperature	+/- 0.5 deg. C	N/A	+/- 0.5 deg. C	N/A
Salinity	+/- 1 psu	N/A	+/- 1 psu at mouth +/- 5 psu or more in the region of most rapid change	N/A

These criteria might be too testing for all regions of the modelled area; a less stringent expectation might be that these conditions should be satisfied for 90% of location/time combination evaluated.

The Consultant may use other methods to evaluate the model performance with clear explanations. The alternative selected methods must be clearly explained and justified.

The advection-dispersion modelling, such as flushing and plume modelling, shall be calibrated/validated with dye dispersion data if available and/or measurements (such as salinity, temperature and/or water quality parameters) of the present/historical conditions. Special care should be given to rationalise the dispersion coefficients and control of artificial numerical dispersion related to numerical schemes and model resolutions.

The water quality modelling shall be calibrated/validated with monitoring data. The seasonal variation shall be evaluated.

The wave transformation model shall be calibrated/validated with the past (hindcasting/storm periods) as well as present condition of measured wave data.

The longshore and cross-shore sediment transport modelling shall be calibrated/validated with historical shoreline evolution data that could be derived from the historical surveys/observations and/or satellite images.

Sediment transport/morphological modelling shall be calibrated/validated with historical survey data.

1.5 Model Application

The modelling study report shall clearly explain the considered modelling scenarios, which need to be determined for the intended purpose, e.g. “typical” or “worst case” conditions, and the range of conditions to be modelled. As a minimum, baseline and further conditions shall be modelled. Where relevant and in accordance with the need to consider appropriate alternative designs during a quantitative EIA study, DM reserves the right to ask for alternative options for a proposed development to also be modelled and evaluated.

Appraisal shall be conducted to determine if climate change should be considered in the modelling; this shall be clearly explained in the simulation model report that will be appended to the EIAR.

1.6 Modelling Results and Deliverables

The modelling study shall be carried out to achieve the EIA objectives. The contents of the coastal modelling study report shall comply with these guidelines, including, but not limited, to the following elements, which shall be described in a comprehensive manner:

- Description of the coastal modelling scope of work
- Objective of the coastal modelling study(ies)
- Rationale for selection of the model(s) (including but not limited to a discussion of the advantages and limitations of the adopted model(s) and a comparison with other considered but not selected models)
- Description of the available data for supporting the modelling study
- Model setup and configuration
- Calibration and validation processes and demonstration that the developed model(s) fit the intended purpose
- Modelling Scenarios and their rationality
- All relevant model output for the production runs with adequate interpretation and assessment of the impacts
- Clear conclusions and recommendations, and limitations of the modelling studies
- All input and output files for the models shall be provided in digital format as an appendix to the report to ensure that the modelling exercise is auditable by DM-ESD
- Presentations in other format, such as animations, shall be submitted to assist DM-ESD's review. DM-ESD reserves the right to ask for the model setup and output in digital format.

Appendix 1 - Marine Water Quality Objectives

S. No.	Parameter		Units	Permissible Limits		
				Sea Water	Creeks & Waterways	Ports
Physical & Chemical Parameters						
1	Ammonium	NH4 ⁺	mg/l	0.1	0.1	0.35
2	Biological Oxygen Demand	BOD ₅	mg/l	5	5	20
3	Chemical Oxygen Demand	COD	mg/l	7	7	35
4	Residual Chlorine	R.C.	mg/l	0.01	0.01	0.01
5	Cyanide	CN	mg/l	0.01	0.01	0.01
6	Dissolved Oxygen 2-m below the surface	DO	mg/l	Greater than 5 or 90% saturation degree	Greater than 5 or 90% saturation degree	Greater than 4 or 90% saturation degree
7	Bottom Dissolved Oxygen	DO	mg/l	Greater than 4	Greater than 4	Greater than 3
8	Fluoride	F ⁻	mg/l	5	5	10
9	Oil and Grease		mg/l	0.01	0.01	1
10	pH		-	1 unit change from ambient	1 unit change from ambient	1 unit change from ambient
11	Phenols		mg/l	0.01	0.01	0.03
12	Polycyclic Aromatic Hydrocarbons	PAHs	mg/l	0.031	0.031	0.31
13	Surface Plankton		mg/l	5	5	10
14	Temperature		Degrees Celsius	2 degrees Celsius change from ambient	2 degrees Celsius change from ambient	2 degrees Celsius change from ambient
15	Nitrate		NO3-N	0.5	0.5	0.5
16	Phosphate		PO4-P	0.01	0.01	0.01
17	Total Nitrogen	TN	mg/l	1	1	1.5
18	Total Suspended Solids	TSS	mg/l	Average 10 and maximum 25	Average 10 and maximum 25	Average 15 and maximum 25
19	Total Phosphorus	TP	mg/l	0.05	0.05	0.05
20	Turbidity		NTU	5	5	10
21	Aldrin		µg/l	0.005	0.005	0.005
22	Dichloro-diphenyl-trichloroethane	DDT	µg/l	0.025	0.025	0.025
23	Dieldrin		µg/l	0.005	0.005	0.005
24	Endrin		µg/l	0.005	0.005	0.005
25	Chlorinated Organic Compounds	PCBs	µg/l	0.03	0.03	0.03
26	Petroleum Hydrocarbons		µg/l	7	7	10
27	Tributyltin and its derivatives	TBT	µg/l	0.001	0.001	0.01 for large ports 0.0074 for small ports
28	Surfactants		µg/l	20	20	20
Metals						
29	Aluminum	Al	mg/l	0.15	0.15	0.2
30	Arsenic	As	mg/l	0.01	0.01	0.01
31	Cadmium	Cd	mg/l	0.003	0.003	0.003
32	Hexavalent Chromium	Cr ⁺⁶	mg/l	0.01	0.01	0.05
33	Copper	Cu	mg/l	0.005	0.005	0.005
34	Iron	Fe	mg/l	0.15	0.15	0.2
35	Lead	Pb	mg/l	4.4	4.4	50
36	Mercury	Hg	µg/l	0.05	0.05	0.5
37	Nickel	Ni	µg/l	7	7	100
38	Zinc	Zn	mg/l	0.02	0.02	0.05
Biological Pollutants						
39	E. coli		CFU/ 100 ml	100	100	100
40	Fecal Streptococci (enterococci)		MPN/100 ml	35	35	35
41	Enterovirus		PFU/10 L	0	0	0
42	Salmonella		MPN/1 L	0	0	0
43	Tapeworm eggs		CFU/100 ml	0	0	0
44	Odor, color, alteration of natural taste		-	0	0	0

Appendix 2 - Effluent Discharge Limits to Marine Environment at the Point of Discharge (Before Mixing with Receiving Waters)

S. No.	Parameter		Units	Permissible Limits
Physical & Chemical Parameters				
1	Ammonium	NH4 ⁺	mg/l	2
2	Biological Oxygen Demand	BOD ₅	mg/l	25
3	Chemical Oxygen Demand	COD	mg/l	100
4	Residual Chlorine	R.C.	mg/l	1
5	Cyanide	CN ⁻	mg/l	0.05
6	Floating Particles		mg/l	Non-Present
7	Fluorides	F ⁻	mg/l	20
8	Oil &Grease		mg/l	5
9	Nitrate Nitrogen	NO ₃ N	mg/l	15
10	Petroleum Hydrocarbons		mg/l	5
11	pH		-	6-9
12	Phenols		mg/l	0.1
13	Phosphates	PO ₄ P	mg/l	0.1
14	Sulfide	S ⁻²	mg/l	0.1
15	Total Suspended Solids	TSS	mg/l	30
16	Total Nitrogen	TN	mg/l	10
17	Total Organic Carbon	TOC	mg/l	75
18	Total Phosphorous	TP	mg/l	2
19	Turbidity		NTU	75
20	Total Dissolved Solids	TDS	mg/l	1500
21	Pesticide		µg/l	0
22	Chlorinated Organic Compounds	PCBs		
23	Polycyclic Aromatic Hydrocarbons	PAHs		
24	Solvents			
25	Tributyltin and its derivatives	TBT		
26	Surfactants			
Metals				
27	Aluminum	Al	mg/l	20
28	Antimony	Sb	mg/l	0.1
29	Arsenic	As	mg/l	0.05
30	Barium	Ba	mg/l	2
31	Beryllium	Be	mg/l	0.05
32	Cadmium	Cd	mg/l	0.05
33	Hexavalent Chromium	Cr ⁺⁶	mg/l	0.1
34	Cobalt	Co	mg/l	0.2
35	Copper	Cu	mg/l	0.5
36	Iron	Fe	mg/l	2
37	Lead	Pb	mg/l	0.1
44	Manganese	Mn	mg/l	0.2
45	Mercury	Hg	mg/l	0.001
46	Nickel	Ni	mg/l	0.1
47	Selenium	Se	mg/l	0.02
48	Silver	Ag	mg/l	0.005
49	Zinc	Zn	mg/l	0.1
Biological Pollutants				
50	Fecal Coliform		Cells /100 ml	1000
51	T. Coliform Count		MPN/100 ml	1000
52	Colon Group		No./100 cm ²	5000
52	Fecal Streptococci		MPN/100 ml	100
53	Enteroviruses		PFU/10 L	0
54	Salmonella		MPN/1 L	
55	Tapeworm Eggs		CFU/100 ml	
56	Egg Parasites		-	
57	Worm Parasites		-	

Annex 4

Part 3

Guidance on Hydrogeological Study and Requirements for Landfills

Guidance on Hydrogeological Study and Requirements for Landfills

This Annex 4, Part 3 provides the detailed requirements for conducting hydrogeological study as part of the EIA for Projects with potential effect on soil and groundwater environment, and the requirements specifically for landfill Projects.

1. Requirements for Groundwater and Soil Environment

This Section describes the principal considerations which should be addressed during the preparation of the hydrogeological study as part of an EIAR, whenever required, within the context of the local hydrogeological environment. The study should be based on real time data collected from the area of interest sufficiently covering the Project boundary and preferably, outside Project boundary. The baseline hydrogeological study should include the following:

- a. General site description
- b. Soil investigation
- c. Geotechnical and geophysical investigation
- d. Depth to water level and flow
- e. Dewatering related issues
- f. Conceptual site modelling
- g. Possibility of groundwater pollution
- h. Groundwater trend (rise) current, during construction & post Project
- i. Proximity with groundwater protected basin
- j. Sea water intrusion
- k. Handling hazardous materials

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In addition to the above, a detailed hydrogeological study should include:

- l. Groundwater flow modelling (if applicable)
- m. Use of modelling results in impact assessment, mitigation plan, and environmental enhancement (solutions).

1.1 General Site Description

Land confirmation with exact extent of the area in Dubai Local Transverse Mercator (DLTM) coordinates should be provided. Maps should be reviewed for the geological and hydrogeological conditions that exist for regional, as well as site specific Project boundary. The recommended minimum distance from two (2) to five (5) kilometers (km) should be reviewed in the context of the hydrogeological environment, as well as the scale of Project and beyond the Project boundaries to reflect the sensitivity of the subsurface. Maps to a scale of 1:50,000 are adequate to present the regional geological and hydrogeological information.

A site visit and walk over survey should be made. Available literature survey should be reviewed for semi regional and site specific location. Location of important sites including protected areas, National Heritage or historical areas or other sites which can be of national interest, dumped material or any other unusual features should be reported.

Topographic base mapping and aerial photography, historical change within and around the Project site should be reported. Drainage pattern should be established using topographic elevations in relation to rainfall-runoff scenario and other relevant conditions. An appropriate resolution map and scale should be presented to describe the same.

1.2 Geology and Soil

Available regional geological and soil maps should be considered in the study which should be duly correlated with the actual field investigations or surveys. This Section should contain a description of the outcrops and bedrock materials including thickness and geological structures like wadi channels, palaeo channel, cavities, joints, faults, folds, etc. An overview of the regional stratigraphy, including thicknesses of the formations, and unit name, is expected. This description should also include an assessment of soils and infiltration properties inferred from grain size analyses from on-site test pits or boreholes, where completed. The report should also contain a minimum of two cross-sections (along perpendicular lines) to support discussions on geology, stratigraphy and flow patterns. Ideally, the cross-sections will be oriented along the groundwater flow path and across the groundwater flow path. In some cases, the cross-sections will be constructed based on the available data (regional sections along roads, etc.). Borehole logs should be shown on the cross sections with an interpretation of geologic units encountered. For shallow construction, test pit data may be correlated, where possible.

Figures to be prepared include;

- Surficial and bedrock geology;
- Soils; and
- Cross sections with plan.

To establish representative soil conditions, sampling should be carried out sufficiently representing changes within the area of interest. Project should quantify the amount of soil present at the site, its quality and possible use. A walk over soil assessment is needed to define soil sampling sites. Once the locations are defined, samples should be collected following US EPA standard (USEPA 2014). The sampling results should be analysed to establish soil quality and its usability. In case soil is required within the Project site, the report should mention the required quantity and quality for the intended use. Possible soil remediation measures can be suggested for approvals which lead to soil quality improvement for the Project specific use. Details of required soil tests (i.e. parameters) are provided in Appendix 4 of this Annex. Characterisation of soil and sub-soils shall be carried out in accordance with a recognised standard or nomenclature system (e.g. BS5930:1990) for sub-soils or Environmental Protection Agency (EPA) Code of Practice for Environmental Risk Assessment for Unregulated Waste Disposal sites, where relevant.

1.3 Geotechnical & Geophysical Investigations

On-site investigations comprised of excavation of test pits or boreholes are advanced to determine surficial geologic and hydrogeologic conditions. While no minimum number of test pits is stipulated, the Environmental Consultant is expected to construct as many test pits as required by the geo-technical regulations and to use professional judgment to determine the number and location of test pits required to adequately assess the soils and overburden materials present on the site.

Boreholes may be constructed in place of test pits and may be finished as monitoring wells. Like test pits, boreholes should be installed at strategic locations across the site so that potential impacts to sensitive groundwater dependent features can be adequately assessed.

Description of test pits or boreholes should be correlated with available relevant maps, logs should be used to prepare hydrogeological cross section running across the Project area, and related information should be provided as appendix.

Wherever required, an appropriate geophysical technique should be employed to investigate subsurface conditions for geological features, sub-surface materials and groundwater conditions.

1.4 Monitoring Wells

Groundwater monitoring well (piezometer) should be constructed to a depth of maximum influence of Project, excavation works or dewatering depth whichever is greater. The depth of piezometer should be representative of the aquifer formation. As a simple rule, minimum drilling depth should be 5-10 meter below the water level. In case, overlying an important aquifer, sufficient aquifer depth should be tapped. Boreholes should advance to

a depth in accordance with the engineering plans associated with planned Project. Test pit or borehole locations, well drilling and installation pictures should be provided as figures and all related information should be provided in appendix. Each borehole record should show the date of excavation, geological description, water level, drilling technique, well/casing diameter and data collection. Coordinates and Ground elevation (in meters DMD) must be provided for each pit. The water level data should be utilized to address key issues like dewatering, anticipated change in water level and water quality status. The location of monitoring wells should also consider up-stream and downstream approach of proposed Project area. For drilling production well & permanent monitoring well, drilling permit can be obtain through DM online service portal. Geotechnical boreholes, dewatering wells and temporary piezometer and are not required to obtain this permit. However, all types of borehole drilling including testing, pumping, dewatering, monitoring etc. should follow DM standard well design layout (refer to Appendix 5 of this Annex). The well protection consists of concrete foundation, and the protection fence. Piezometers can be maintain until the time of EIA approval and may be preserved for extended monitoring phases. Any well, piezometer, standpipe or test borehole that is no longer in use should immediately be decommissioned following standard procedures (refer to Appendix 6 of this Annex).

1.5 Water Quality

A description of groundwater quality and surface water, wherever applicable, should be provided to establish a baseline for the assessment of potential future impacts. The list of groundwater quality parameters is provided in Appendix 3 of this Annex.

1.6 Water Balance

This Section should present the details of various types of water use within the Project including pre- and post- Project. A precise groundwater balance should be presented using applicable standard techniques of groundwater budgeting. Impact of Project activities (e.g. dewatering, pumping, infiltrations, etc.) and future water use (e.g. recreational, parks, ponds, irrigated land, open land, etc.) on hydrogeological environment should be discussed.

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1.7 Conceptual Groundwater Model

Conceptual Site Model (CSM) helps determine the types of hydrogeological environment present at the Project location. The CSM should provide all in and out components in terms of source, pathway, receptor and linkages. The description of the CSM (with appropriate schematic 3D-diagram) should include layered geological and hydrogeological information presented in the maps and cross sections, and its responses (susceptibility) to identified features and potential activities associated with proposed Project (i.e. during or post development).

1.8 Groundwater Protected Basins

Construction projects and/or anthropogenic activities, such as farming, recreation, or any other intrusive activity in proximity to groundwater-protected areas, would automatically qualify for a detailed hydrogeological and groundwater modeling study. The demarcation and description of groundwater resources in protected areas, divided into Zones A and B in the Emirate of Dubai, are presented in Appendix 1 of this Annex. Groundwater-protected zones restrict certain types of activities and land-use patterns that can be hazardous to the natural groundwater environment. Meanwhile, for some land-use categories, the allocation shall be based on feasibility studies. A general land-use allocation criterion within groundwater-protected zones is presented in Appendix 2 of this Annex. The feasibility study or pre-EIA study shall examine the appropriateness of the proposed land use in a logical manner. More specific land-use allocation should be based on in-situ groundwater dynamics or vulnerability models. Whereas, for existing projects and activities before the release of the guidance document on groundwater-protected areas, risk assessment, mitigation, and environmental enhancement plans to avoid, reduce, or minimize undesirable impacts on the groundwater environment should be developed and implemented in consultation with NRSS.

Technical guidance for groundwater-protected areas in the Emirate of Dubai provides a regulatory framework and technical basis, along with a description of the minimum requirements to support the protection of environmental media (mainly groundwater and soil) from any undesirable impact resulting from anthropogenic activities, e.g., recreational, commercial, and developmental projects. Any proposed activity/project/establishment, irrespective of its physical scale, should analyze the possible impact on groundwater resources with the help

of a hydrogeological study, including calibrated mathematical models. Project proponents, consultants, and contractors are required to undertake pre-consultation with NRSS to confirm the scope of the required technical study for the assessment of the impact. In case an activity is permitted within the Groundwater Protected Area, the EIA or Hydrogeological study must be carried out in such a manner that it will not release contaminants into the groundwater or aquifer or adversely affect public groundwater, upholding Articles 13 and 14 of Dubai Law No. 15 (2008) concerning Groundwater protection. Additionally, it must comply with applicable federal, emirate, and municipal regulations and orders.

1.9 Groundwater Flow and Solute Transport Modelling Study

Modelling studies are required to see the overall complex environment behavior with applied threats or stresses. This specific requirement will be based upon Project components like geographical extents, intrusive character, distance from groundwater protected basin, impact on groundwater environment, etc. The groundwater flow modelling should consist of the following:

- Selection of model extents and grids;
- Integration of all inputs;
- Boundary conditions;
- Conceptualisation of 3D hydrogeological environment;
- Aquifer parameters;
- Groundwater balance components;
- Selection of appropriate chemical parameters for solute transport modelling;
- Aquifer parameters and stress conditions;
- Calibrations (steady and transient states);
- Validation; and
- Relevant stress based futuristic scenarios.

The outcomes of the modelling study should be used in the impact assessment and identification of mitigation and environmental enhancement measures.

The standard content or structure of hydrogeological study for an EIAR, if required, is provided in Appendix 7 of this Annex.

2. Requirements for Landfill Sites

This section provides detailed guidance on the required construction design plan for Landfill Projects. This plan should be submitted to the DM-ESD for necessary review and approval.

2.1 Site selection

Ideally, areas with least susceptibility to groundwater contamination should be selected for landfill site. The criteria for the identification of potential suitable sites include, but not limited to, the following:

- i. City masterplan & developmental Projects;
- ii. Hydrogeological and geological conditions;
- iii. Geotechnical aspects;
- iv. Meteorological aspects;
- v. Land use and availability of land;
- vi. Prevailing wind pattern; and
- vii. Distance to roads, sewage systems, electricity.

After identification of sites, which generally fulfill the requirements, an investigation of each potential site should be carried out consisting of the following:

- i. Investigation of hydrogeological and geological conditions
- ii. Vulnerability model
- iii. Environmental impact assessment study

iv. Environment management & monitoring Plan

As a general rule, the following should be considered:

- (a) Landfill site should not fall within (or 1 km towards downstream) any groundwater protected area.
- (b) Upstream of groundwater protected basin (Item a) should be strictly avoided.
- (c) Maintain a safe depth to water level (>25-30 m) below ground level.

2.2 Landfill Development Plan

The site layout plan should show clearly the location of the area to be selected for landfill. Regional and site-specific, high-resolution Digital Elevation Model (DEM) should be prepared showing the proposed landfill. The site drawing should include all the landfill components with proper size and elevation with mean sea level reference.

Contour intervals vary depending on ground elevation. For small features, 0.25-m contour interval can be used while sites with high topographical relief may have contours at intervals of 0.5-m or 1.0-m.

2.3 Site Infrastructure

The following principal infrastructure elements should be discussed in detail:

- Access and traffic control;
- Site accommodation and compounds;
- Weighbridges;
- Wheel cleaners;
- Site services;
- Civic waste facilities;
- Security; and
- Leakage detection and alarm system.

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2.4 Leachate Management and Treatment

Leachate management system should consider the following objectives:

- Reduce the potential for seepage out of the landfill through the sides or the base either by exploiting weaknesses in the liner or by flow through its matrix;
- Prevent liquid levels rising to such an extent that they can spill over and cause uncontrolled pollution to ditches, drains, watercourses, etc.;
- Influence the processes leading to the formation of landfill gas, chemical and biological stabilization of the landfill;
- Minimise the interaction between the leachate and the liner; and
- Ensure the stability of the waste in case of above ground landfill.

2.5 Groundwater and Surface Water Management

It is essential that a landfill design includes provisions for the management and protection of both groundwater and surface water. Information gathered from the investigations will assist in detailing the level of groundwater or surface water management required.

Groundwater management may be required to minimise or prevent:

- Interference with the groundwater regime during the construction period;
- Damage to the liner (by uplift);
- Transport of contaminants from the landfill; and
- Leachate generation by preventing groundwater infiltration.

2.7 Required Lining System

The lining system protects the surrounding environment including soil, groundwater and surface water by

containing leachate generated within the landfill, controlling ingress of groundwater, and assisting in the control of the migration of landfill gas. The selected liner system must achieve consistent performance and be compatible with the expected leachate for the design life of the facility.

2.8 Recommended Capping System

The main objectives in designing a capping system are to:

- Minimise infiltration of water into the waste;
- Promote surface drainage and maximise run off;
- Control gas migration; and
- Provide a physical separation between waste, and plant and animal life.

The capping system normally includes a number of components which are selected to meet the above objectives.

2.9 Environmental Monitoring Systems

The waste dump sites should have permanent groundwater monitoring plan which can sufficiently monitor its impact, both temporally and spatially. Groundwater monitoring wells should be installed for periodic quality check. A record of quality and water level at regular interval should be maintained and made available to the DM-ESD, when required.

The waste dump site should have a permanent groundwater dewatering system which can operate to keep groundwater below safe level (if groundwater rise poses a threat on system).

The environmental monitoring system should include alarm system for any air and water contamination incidents and emergency evacuation plan.

Appendix 1 - Groundwater Protected Zones



NOTE:

(1) **The Inner Protection Zone (Zone A)** lies more distant from the wellhead and provides protection against contamination. The risk of bacterial contamination from land use is greatly reduced in this Zone but significant pollution risks still persist from petroleum products, chlorinated solvents and persistent chemicals or activities. This constitute a wellfield or part of sub-basin i.e. relatively smaller in size in comparison to the entire well head basin. It is very significant in terms of public health and since it is relatively small in size, implementation and enforcement are more readily achieved. Its extent is usually defined by groundwater travel time, whereby a 50 days radius is most commonly applied.

(2) **The intermediate Protection Zone (Zone B)** (or total source capture area) encompasses the entire contribution zone of the groundwater catchment area. It provides protection against persistent contaminants. In situations of intensive groundwater exploitation it is also significant in terms of resource conservation for potable water supply. TDS contour line of 2000 mg/l (encompasses zone A fully) is considered as Zone B boundary.

(3) The groundwater-protected zones restrict certain types of activities and landuse pattern. The Technical Guidance for Groundwater Protected Areas in Emirate of Dubai is available in the DM website, or can be obtained from the NRSS.

Appendix 2 - Land Uses/Activities Allocation Status Within Groundwater Protected Zones

S. No.	Items	Protected Basins	
		Zone A	Zone B
1	Petrol Station	Not permitted	Not permitted
2	Sewage Treatment Plant (STP's)	Not permitted	Not permitted
3	Landfills	Not permitted	Not permitted
4	Abattoir	Not permitted	Not permitted
5	Food processing facilities	Not permitted	Not permitted
6	Dairy & Poultry Farm	Not permitted	Not permitted
7	Manure stockpiling	Not permitted	Not permitted
8	Commercial groundwater use	Not permitted	Not permitted
9	Cemetery	Not permitted	Allowed with conditions: According to the environmental requirements and the approval of other competent authorities
10	New Agriculture Farms	Not permitted	
11	Livestock/Animal grazing/Izba's	Not permitted	
12	Forestry	Groundwater dependent forestry is not permitted	
13	Water treatment (RO facility)	Not permitted	
14	Recreational activities (Swimming pools, Golf course, water features, sports fields, camping, sand bashing, lagoons)	Not permitted	
15	Construction Projects	Not permitted. Project for Environmental enhancement, protection and management are allowed.	

Appendix 3 - Baseline Groundwater Quality Parameters

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S. No.	Parameter	Unit of measurement
Coordinates of sampling location(s)		
Date/time of sampling		
Sampled after well purging by (Bailer/Pump)		
Total Project area		
Depth to water level (m)		
Physical parameters		
1	pH	
2	Temp	Degree Celsius
3	Color	
4	Turbidity	NTU
5	E Conductivity	microS/cm
6	TDS	mg/L
7	Total Hardness	mg/L as CaCO ₃
8	Residual chlorine	mg/L as Cl ₂
Inorganic parameters		
9	Sodium	mg/L
10	Potassium	mg/L
11	Calcium	mg/L
12	Magnesium	mg/L
13	Sulphate	mg/L
14	Nitrate	mg/L
15	Phosphate	mg/L
16	Total Nitrogen	mg/L
17	Chloride	mg/L
18	Aluminium	µg/L
19	Arsenic	µg/L
20	Cadmium	µg/L
21	Chromium	µg/L
22	Cobalt	µg/L

S. No.	Parameter	Unit of measurement
23	Copper	µg/L
24	Iron	µg/L
25	Lead	µg/L
26	Molybdenum	µg/L
27	Boron	µg/L
28	Barium	µg/L
29	Beryllium	µg/L
30	Manganese	µg/L
31	Zinc	µg/L
32	Mercury	µg/L
Miscellaneous parameters		
33	Oil & Grease-Free oil	mg/L
34	Pesticides-Non Chlorinated	mg/L
35	Phenols	mg/L
36	Benzene	mg/L
37	Hydrogen sulphide	mg/L
38	Total Cyanide	mg/L
39	Dissolved Oxygen	mg/L
40	Biochemical Oxygen Demand	mg/L
41	1, 2 dichloroethane	mg/L
42	Dichloromethane	mg/L
Microbial parameters		
43	E. Coli	CFU/100 ml
44	Total Coliform	CFU/100 ml
45	Total Bacterial Count	CFU/100 ml @37 degree Celcius

i. WHO drinking water standard to be followed for Lower detection limit (LDL)

ii. Dutch Intervention Value (DIV, 2000) parameters* & limits to be followed for area other than protected area

iii. WHO drinking standard limits to be followed for protected area

Appendix 4 - Baseline Soil Quality Parameters

S. No.	Parameter	Unit of Measurement
Sampling date		
Soil sample coordinates + map		
Depth to water level (m)		
Representative sample depth (cm) as follows: 0 cm - 50 cm - 100 cm – 150 cm – 200 cm (i.e., four samples as per the depths taken from each different 3 locations as minimum, with total 12 minimum samples)		
Physical parameters		
1	pH	-
2	E Conductivity	microS/cm
3	SAR	Ratio
4	Exchangeable Na	meq/L
5	CEC	meq/100g
6	ESP	%
7	Gypsum%	%
8	Estimated Organic Carbon	% OC
9	Zn, Mn, Fe, Cu, Al, Co, Cd, Pb, As, Cr, Ni, Hg, CN- (Total concentration& Leachable fraction)	mg/kg
10	Soil Texture	USDA classification
11	Bulk Density	kg/m ³
12	CaCO ₃	%
13	Total Nitrogen	%
14	TPH, PAHs, VOCs, Pesticides and Herbicides, Dioxins and Furans.	mg/kg
Quantitative assessment		
1	Cut and fill volume	Cubic meter
2	Agricultural soil	Cubic meter
3	Non-agricultural soil	Cubic meter

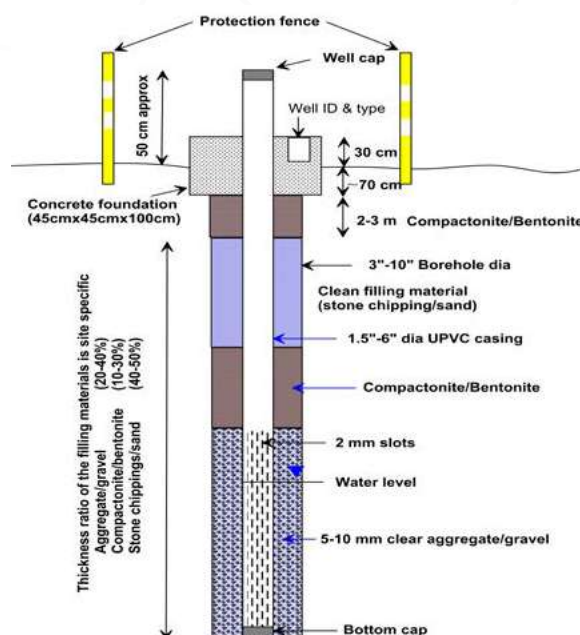
NOTE:

(1) For example, to collect soil samples from 0 to 50 cm deep, a vertical hole is drilled 10 cm in diameter and 50 cm in depth. The extracted soil is then divided into equal layers every 10 cm, from the surface (0 cm) to the bottom of the hole (50 cm). All these layers of soil are mixed, then packed into sealed plastic bags with clearly named (layer depth, sampling site, history, etc.).

(2) The sampling methodology, result, analysis and discussion should be presented in relevant sections of the EIAS/EIAR.

(3) Ensure that the information on soil erosion and sediment is presented clearly, accurately, and comprehensively, including but not limited to, sources of erosion, potential impacts, mitigation measures (e.g., erosion control blankets, sediment traps), monitoring plans.

Appendix 5 - Schematic Well Design



Appendix 6 - Well Abandonment

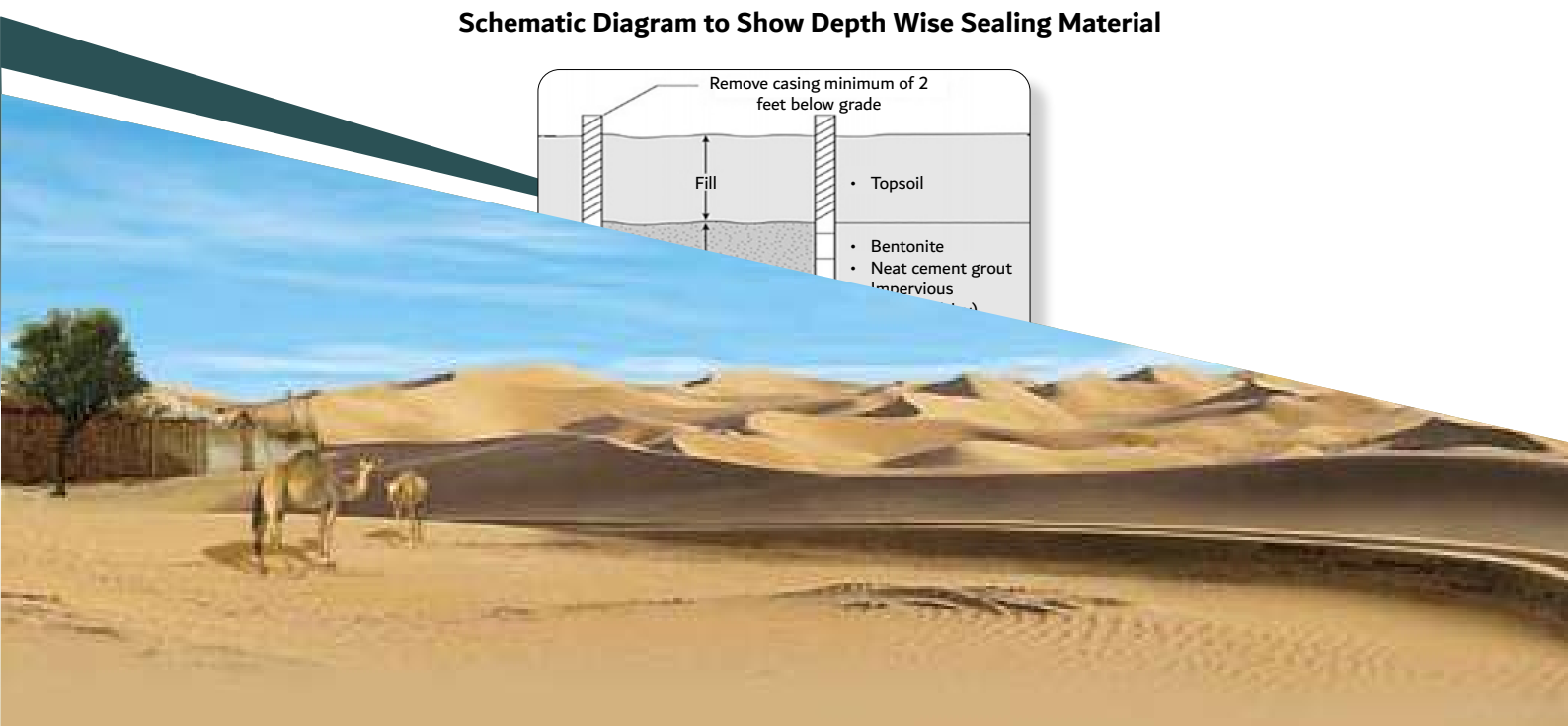
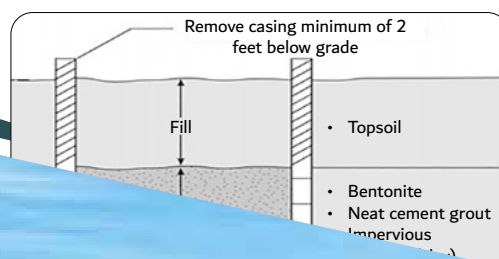
Well Abandonment Report

Make a report detailing the method statement described below, including the field activity pictures.

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1. Take photos for the existing well before closing.
2. Remove all accessories cable, pump & whole screen (or till 3-10 feet) from the existing wells.
3. Fill the groundwater well by natural sand, Bentonite, soil, and gravel. These material should be uncontaminated (take photos for the material / sand).
4. The impervious layer depth slot should be filled with impervious sealing material.
5. Fill the top layer 3 to 5 meters of the well by Bentonite mixed with water, the impervious seal/layer, to avoid the groundwater from any type of contamination.

Schematic Diagram to Show Depth Wise Sealing Material



Appendix 7 - Standard Content for Soil and Groundwater Resources Study

Section	Contents	EIAS	EIAR	Hydrogeological Study
Introduction	Regional-Geology, Hydrogeology		✓	✓
	Hydrology (Rainfall, Runoff, flood-scenario, Infiltration, Surface water flows, ponds, drainage & sewerage)		✓	✓
	Identification of direct & indirect threats from existing & proposed landuse	✓	✓	✓
	Local-Geology, Hydrogeology & Storm water handling	✓	✓	✓
Baselines	Establish baseline Groundwater & Soil conditions	✓	✓	✓
	Sampling maps (Location coordinates, sampling photos)	✓	✓	✓
	Representative Groundwater levels & Quality	✓	✓	✓
	Depth to groundwater, Groundwater elevation maps		✓	✓
	Integration of Geotechnical finding (Lithology, structure, permeability, water level, SPT etc) and conclusion drawn		✓	✓
	Tidal effect on groundwater, Sea-water intrusion		✓	✓
	Additional aquifer tests to understand aquifer behaviors		✓	✓
	Environmental soil testing & quantitative assessment		✓	✓
	Quantify different water use types	✓	✓	✓
Conceptual model	Groundwater budget integrating all influential components		✓	✓
	Develop conceptual Gw model integrating all In & OUT components (in text & as schematic diagram)	✓	✓	✓
Numerical Modeling	Develop initial conditions with site specific aquifer parameters and steady state model			✓
	Transient stage-Calibration & Validation			✓
	Relevant stress futuristic Scenarios			✓
Impact assess (during project & post project) on Soil & groundwater	Quantify different water types and discuss impact on groundwater level rise, decline, change in flow pattern		✓	✓
	Impact of activities and landuse on Groundwater quality	✓	✓	✓
	Short & long term impact	✓	✓	✓
	Identify risks on Soil & Groundwater resources	✓	✓	✓
	Impact/Risk Assessments	✓	✓	✓
	Discuss worst case impact & preparedness		✓	✓
Management & monitoring control plans	Description of Project specific impact & mitigation measures	✓	✓	✓
	Develop & prioritize categories of impacts/Risks based on their severity	✓	✓	✓
	Environmental monitoring Report	✓	✓	✓
	Environmental improvement plan		✓	✓



Annex 4

Part 4

Guidance on Biodiversity Baseline Assessments

Guidance on Biodiversity Baseline Assessments

Biological Environment

Baseline studies of biodiversity resources provide a reference point against which any future changes associated with a Project can be assessed and offer information for subsequent monitoring of biodiversity performance. A comprehensive baseline study should identify (both in the immediate and wider area around a Project site) habitats that will be affected, the range and status of the main species groups that live in the area, the potential presence and status of protected areas or other important areas for biodiversity, and any potential impacts to ecosystem services that might have local, regional or global impacts. A list of good practices on conducting ecology survey is provided in Appendix 2 of this Annex.

The following should be provided in the description of the biological environment:

- Assessment of flora and fauna present within the impact zone of the Project delineating season and duration:
 - Conservation status of each species should be highlighted as categorised by national and international authorities
 - Diversity indices should represent the condition of the species, habitats and communities.
- Assessment of, but not limited to, potential damage to terrestrial and aquatic flora and fauna due to discharge of effluents and gaseous emission, air pollution, land use and landscape changes from the Project during construction and operational phases.
- Assessment of, but not limited to, damage to aquatic (freshwater and marine) flora and fauna (including commercial fishing) due to physical disturbances, alterations and effect of any activity during the construction and operational phases.
- Description of potential biological stresses within the impact zone of the proposed Project.
- Description of measures in relation to its impact on the biological diversity in the Project area or its adjacent areas in accordance to the mitigation hierarchy.

Employment of Assessment Methods

Results in the employment of methods should be quantifiable and should not be presented only as qualitative.

For aquatic environment, the following taxa and ecosystems should be assessed, including but not limited to:

- Mammalia
- Reptilia
- Fishes
- Phytoplankton
- Zooplankton
- Invertebrates (including macro-benthos, meo-benthos)
- Seaweeds (macroalgae)
- Benthos and associated communities (shoreline, intertidal, etc.)
- Coral reefs
- Seagrass and associated species
- Mangroves

The following standard technique/s should be employed, otherwise, accepted published protocols should be described appropriately and justified:

- Bibby, C. J., Burgess, N. D., Hill, D. A. and Mustoe, S. H. (2000) Bird Census Techniques. Second edition. London: Academic Press.
- English S, Wilkinson CR and Baker VJ. (1994) Survey Manual for Tropical Marine Resources. Australian Institute of Marine Science. 368 p.
- Glasson, J., Therivel, R. and Chadwick, A. (1999). Introduction to Environmental Impact Assessment. UCL press Ltd. London & Philadelphia; USA.
- Mueller-Dombois, D. and Ellenberg, H. 1974. Aims and Methods of Vegetation Ecology. Wiley, New York. 547 pp.
- Rau, J.G. and Wooten, D. C. (1980). Environmental Impact Analysis Handbook. New York, McGraw Hill.
- Standard Survey Methods for Key Habitats and Key Species in the Red Sea and Gulf of Aden. PERSGA Technical Series No. 10. PERSGA, Jeddah.
- Standard Techniques should be followed for assessment of shoreline assessment and intertidal benthic fauna (English et al. 1994).
- UNEP. (1988). Environmental Impact Assessment- Basic Procedures for Developing Countries. The World Bank.

For terrestrial environment, the following taxa should be assessed, including but not limited to:

- Flora
- Mammalia
- Aves
- Reptilia
- Amphibia

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Standard technique/s described in the following should be employed, otherwise, accepted published protocols should be described appropriately and justified.

Flora

Detailed accounts of vegetation units noted in the field should be described in accordance with the relevant literature for Dubai / UAE (e.g. Deil & Müller-Hohenstein, 1996; Brown & Sakkir, 2004; Brown & Böer, 2005; Feulner, 2011; Deil & Müller-Hohenstein, 1996).

The following methods for vegetation survey and abundance assessment should be used:

- Line intercept method to estimate percentage cover (Kent & Coker 1994).
- Point quarter plot (Bonham 1989; Dix 1961; Risser & Zedler 1968).
- Bonham, C.D. 1989. Measurements for terrestrial vegetation. John Wiley Sons, New York. pp. 159-164.
- Brown, G. & Sakkir, S. (2004). The vascular plants of Abu Dhabi Emirate. Internal Research Report, Environmental Research and Wildlife Development Agency (now Environment Agency), Abu Dhabi.
- Brown, G. & Böer, B. (2005). Terrestrial Plants. In: Hellyer, P. & Aspinall S. (eds.), The Emirates—A Natural History. Trident Press, London. pp. 141–155.
- Deil, U. & Müller-Hohenstein, K. (1996): An outline of the vegetation of Dubai (UAE) – Verhandlungen der Gesellschaft für Ökologie 25: 77-95.

- Dix, R.L. 1961. An application of the point-centered quarter method to the sampling of grassland vegetation. *Journal of Range Management* 14:63-69.
- Feulner, G.R. (2011). The flora of the Ru'us al-Jibal – The mountains of the Musandam Peninsula: An annotated checklist and selected observations. *Tribulus* 19: 4–153.
- Kent M., Coker P. 1994. *Vegetation description and analysis. A practical approach*. Belhaven Press, London, 363.
- Mueller-Dombois, D. and Ellenberg, H. (1974). *Aims and Methods of Vegetation Ecology*. Wiley, New York. 547 pp.
- Risser, P.G., and P.H. Zedler. (1968.) An evaluation of the grassland quarter method. *Ecology* 49:1006-1009
- **DAFOR:** This method is used for assessing abundances of plants over large areas. It is a density or cover measure. This involves simply assigning each species as dominant, abundant, frequent, occasional or rare ('DAFOR'). These classes have no strict definition and the Environmental Consultant must decide based on their professional judgement and interpretation, including the scoring system based on relative cover or density of species.
- **Quadrats:** Quadrats are for measuring abundances of sessile species in any vegetation, including aquatic macrophytes. Quadrats can be used to measure density, frequency, cover or biomass. They are used to define sample areas within the study area and are usually four strips of wood, metal or rigid plastic, which are fixed together to form a square. It can be useful to use bolts so that the quadrat can be dismantled for storage or transport. For aquatic macrophytes, a wood or plastic frame will float and can be used to sample floating or emergent vegetation on the water surface.
- **Point Quadrats:** Point quadrats are used for estimating cover of grasses, herbs, mosses, etc. in short vegetation. A point quadrat is a thin rod with a sharpened tip, and should usually be made of metal for rigidity and strength. Good materials are thick gauge wire, welding rod, knitting needles and even bicycle spokes. The point quadrat is lowered vertically through the vegetation and various recording methods can be used to get various types of data.
- **Transects:** Transects can be used for a variety of survey purposes in any vegetation. Standard techniques should be followed as per Mueller-Dombios, D. and Ellenberg, H. (1974) *Aims and Methods of Vegetation Ecology*, Wiley, New York.

Reptiles

Most common survey method employed to estimate the abundance of reptiles involve capturing individuals.

Summary of Methods Suitable for Various Groups

Method	Snakes	Lizards	Turtles
Hand capturing	*	*	*
Noosing		+	
Trapping	?	+	+
Marking individuals	*	*	*

* Method usually applicable, + method often applicable, ? method sometimes applicable.

Birds

Birds are among the easiest of animals to census. They are often brightly coloured, highly vocal at certain times of the year and relatively easy to see. They are also very popular, with the result that high-quality field guides are available in most parts of the world and there are many professionals and amateurs with a high level of identification skills. Because of this popularity, they are undoubtedly the most frequently surveyed of all taxonomic groups. Bibby et al. (2000) gives an excellent and detailed review of techniques.

Summary of Methods Suitable for Various Groups

Method	Water-birds	Seabirds	Wading birds	Raptors	Near-passerines	Passerines
Line transects	+	*	+	+	+	*
Point transects	?		?	?	+	*
Counting colonial nests	+	*		?	+	?
Counting roosts and flocks	*		*		?	?
Counting migrants				+		?
Indirect counts	+		?			
Tape playback		+		+	?	?
Vocal individuality	?	?	?	?	?	?

* Method usually applicable, + method often applicable, ? method sometimes applicable.

Mammals

Census methods for mammals depend critically on the size of the species and its natural history. If species are diurnal, common and highly visible, the census problem is relatively simple. If species are nocturnal, rare and difficult to detect, the census problems are most difficult. As in all ecological census work, the Environmental Consultant shall decide the purpose of the study and the level of precision required. The following methods should be used:

- Line transects
- Feeding signs
- Pellet count
- Camera traps
- Sherman traps

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Marine Mammals

Approaches to evaluating marine mammals from a biodiversity perspective are significantly different to most other marine organisms because of the geographic scale of distributions, and the conservation status of many of the species which are found in the region. Standard techniques that should be used to assess the marine fauna include:

- PERSGA (2010), Evans & Hammond (2004). Standard Survey Methods for Key Habitats and Key Species in the Red Sea and Gulf of Aden. PERSGA Technical Series No. 10 (2010). PERSGA, Jeddah.
- Evans, P.G.H. & Hammond, P.S. 2004. Monitoring cetaceans in European waters. Mammal Review, 34, 131-156.

Shoreline Assessment and Intertidal Benthic

Standard techniques that should be followed for assessment of shoreline and intertidal benthic fauna include:

- PERSGA (2010), Evans & Hammond (2004). Standard Survey Methods for Key Habitats and Key Species in the Red Sea and Gulf of Aden. PERSGA Technical Series No. 10 (2010). PERSGA, Jeddah.
- English S, Wilkinson CR and Baker VJ. (1994) Survey Manual for Tropical Marine Resources. Australian Institute of Marine Science. 368 p.

Habitat Description

Habitat of the Project area should be classified with reference to the following:

- Brown, G. & Böer, B. (2004) Interpretation Manual of the Major Terrestrial Natural and Semi-Natural Habitat Types of Abu Dhabi Emirate. - ERWDA Internal Research Report. 62 pp.
- Al Dhaheri, S., Javed, S., Alzahlawi, N., Binkulaib, R., Cowie, W., Grandcourt, E. and Kabshawi, M. (2017). Abu Dhabi Emirate Habitat Classification and Protection Guideline. Environment Agency Abu-Dhabi.

The following components should be included in the EIAR for Projects that will have impacts on the sensitive areas described in the following paragraph:

- o Vulnerability Assessment
- o Flight Path Assessment
- o Bird-Friendly Building Design Plan
- o Translocation and Conservation Plan

Sensitive Areas:

- Areas with important regulating services in terms of maintaining biodiversity such as Protected areas: defined as “A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (IUCN, 2008). The Protected Area Network in the Emirate of Dubai is presented in Appendix 1 of this Annex.
- Areas containing threatened ecosystems outside of formally protected areas, where certain classes of activities would always require an impact assessment at an appropriate level of detail.
- Areas identified as being important for the maintenance of key ecological or evolutionary processes, where certain classes of activities would always require an impact assessment at an appropriate level of detail.
- Areas known to be habitat for threatened species, which would always require an impact assessment at an appropriate level of detail.
- Areas with important regulating services for maintaining natural processes with regard to soil, water, or air, where impact assessment at an appropriate level of detail is always required. Examples can be wetlands, highly erodible or mobile soils protected by vegetation (e.g. steep slopes, dune fields), forested areas, coastal or offshore buffer areas, etc.
- Areas with important provisioning services, where impact assessment at an appropriate level of detail is always required. Examples can be extractive reserves, lands and waters traditionally occupied or used by local communities, fish breeding grounds, etc.
- Areas with important cultural services, where impact assessment at an appropriate level of detail is always required. Examples can be scenic landscapes, heritage sites, sacred sites, etc.
- Areas with other relevant ecosystem services (such as flood storage areas, groundwater recharge areas, catchment areas, areas with valued landscape quality, etc.); the need for impact assessment and/or the level of assessment is to be determined (depending on the screening system in place).
- Species with conservation status higher than “least Concern” or “Data Deficient” categorised under IUCN or Local threat categories.

Wildlife Translocation

The translocation of wildlife should be carried out as per the guidelines given below:

- Translocation, Handling, and Restoration of Wildlife in the Emirate of Dubai, NRS, Dubai Municipality.
- IUCN/SSC (2013). Guidelines for Reintroductions and Other Conservation Translocations. Version 1.0. Gland, Switzerland: IUCN Species Survival Commission, viii + 57 pp.

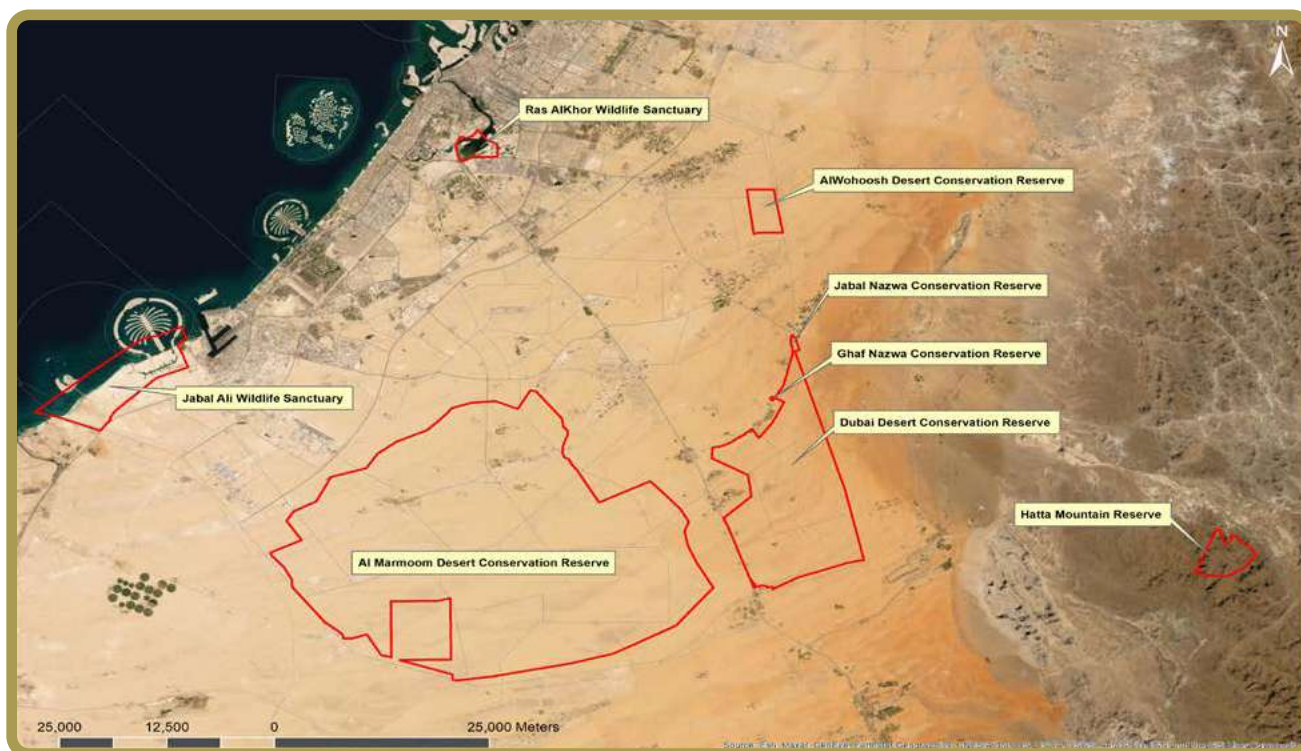
Fill Data

Data gathered during EIA should be submitted in the format below along with the submission of the EIA report.

Date and Time	Habitat (According to Brown G. and Boer B. (2004) and Al Dhaheri et al. (2017))	GPS Coordinate	Species	Number	Activity	Methods

- Brown G. and Boer B. (2004). Interpretation Manual for the Major Terrestrial Natural and Semi – natural Habitat Types of Abu Dhabi Emirate. Environmental Research and Wildlife Development Agency, Abu Dhabi.
- Al Dhaheri, S., Javed, S., Alzahawi, N., Binkulaib, R., Cowie, W., Grandcourt, E. and Kabshaw, M. (2017). Abu Dhabi Emirate Habitat Classification and Protection Guideline. Environment Agency Abu-Dhabi.

Appendix 1- Protected Area Network in the Emirate of Dubai



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Appendix 2- Good Practice on Conducting Ecology Survey

Good Practice on Conducting Ecology Survey

- Assess the scale of the whole area surrounding the potential development site for which the impact is to be assessed i.e. the study area for each impact type should be an ecologically meaningful unit. For example, if a road is to pass through a heathland, the ecological survey should consider the entire heathland rather than just the road route, and impacts on hydrology should be considered in the context of the appropriate watershed rather than a fixed corridor.
- Decide on the main season or whether through the year surveys are required, considering the importance of the site in migration, breeding and winter periods.
- Assess the level of normal variation to be expected. Does the population of some species fluctuate wildly? Are key species elusive? Decide the number and spread of visits e.g. generally 5-10 visits are required to adequately detect birds from a range of habitats, with five being the minimum.
- Decide whether to conduct a full survey or a sample survey. If the area is especially large a sample survey may be better unless the area is composed of a mosaic of different habitats, in which case, a stratified design would be more appropriate.
- Decide on the specific method – whole wildlife community or is the location of key species more important. If a compromise is promoted usually neither the common species nor the rarer ones will be adequately covered.
- Assess the skills of the observer/recorder and use trained staff. It is important that professionals who understand the process of interpretation are employed. Specialist amateurs may need to be approached to cover some difficult groups.
- Decide early on the methods to be used to capture data (maps, recording forms, etc) and how it will be computerised.
- Determine the best methods of presenting the data e.g. mean monthly maxima, graphically presented, in map form, as territory clusters, as mean and maximum counts per season, as bird-days, and/or as an index. This will often be species specific.
- Decide whether and how to incorporate existing data from a diversity of sources. Provide an assessment of its strengths/limitations for EIA purposes, recognizing that much of the data will have been collected for different objectives and so is unlikely to be available in a standard format.

Annex 5

Technical Guideline
on Electromagnetic Fields

Technical Guideline on Electromagnetic Fields

INTRODUCTION

Electromagnetic fields (EMF) consists of invisible waves of electric and magnetic energy moving together through space and often are used to indicate the presence of electromagnetic radiation. These fields occur naturally but can also be generated from anthropogenic activities mainly through electricity use. Power lines, telecommunication towers, mobile phones, appliances and home wirings are some possible anthropogenic sources of non-ionizing electromagnetic radiation.

Power lines, substations, transformers and other electrical sources emit extremely low frequency (ELF) EMF (ARPANSA, n.d.). Extremely low frequency is in the range of >0 Hz – 300 Hz (OSHA, n.d.). On the other hand, radiofrequency radiation (RF radiation) waves have frequencies up to 300 GHz (Australian Government, 2016). AM/FM radios, TVs, mobile phones, telecommunication towers, microwave ovens and satellite stations emit waves at these frequencies. Strong electromagnetic fields pose risks to living tissues and human effects may be immediate. These effects are observed at frequencies of 100 kHz and above (European Commission, 2007). The electromagnetic spectrum and radiation frequencies are presented in Figure 1.

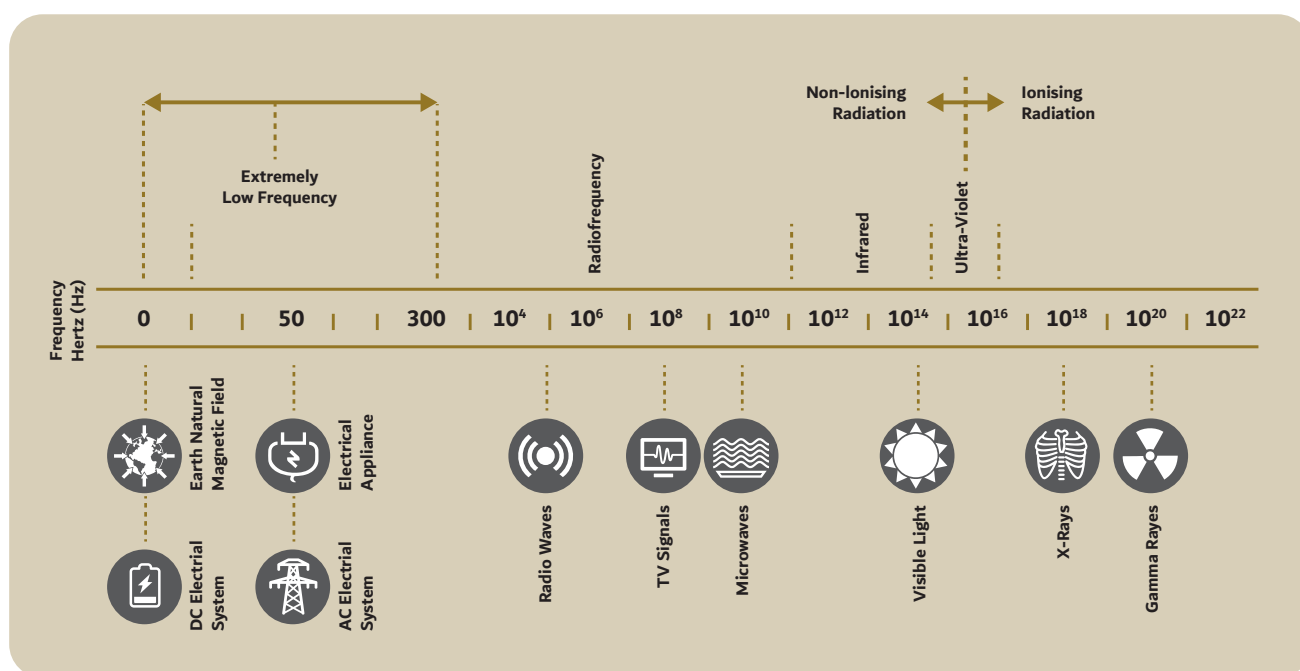


Figure 1: The electromagnetic spectrum (Source: ESB, 2017)



Both electric fields and magnetic fields rapidly decrease in intensity as distance from an electrical source increases. The characteristics of electric and magnetic fields are described in Figure 2.

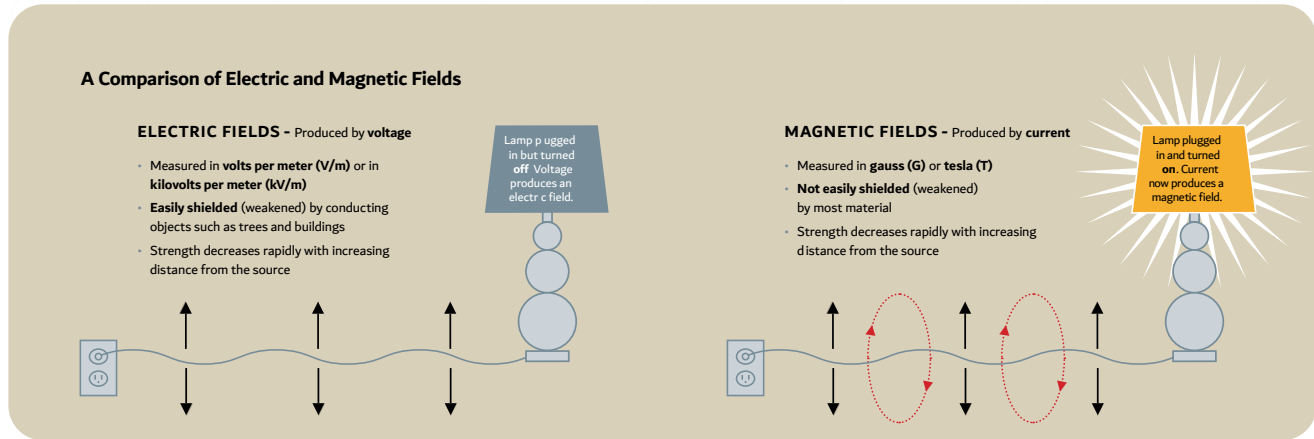


Figure 2: Comparison of Electric and Magnetic Fields (Source: Dominion Energy, n.d.)

Existing guidelines, such as those established by the International Commission on Non Ionizing Radiation Protection (ICNIRP), set limits that protect the human population against exposure to EMF. Key points about ICNIRP's guidelines are:

- ICNIRP issues guidelines on the basis of the current scientific knowledge. Most countries draw on these international guidelines for their own national standards.
- Standards for low frequency electromagnetic fields ensure that induced electric currents are below the normal level of background currents within the body. Standards for radiofrequency and microwaves prevent health effects caused by localized or whole body heating.
- Guidelines do not protect against potential interference with electromedical devices.
- Maximum exposure levels in everyday life are typically far below guideline limits.
- Due to a large safety factor, exposure above the guideline limits is not necessarily harmful to health. Furthermore time-averaging for high frequency fields and the assumption of maximum coupling for low frequency fields introduce an additional safety margin.

In line with the Dubai Government commitments centered on enhancing people's happiness and quality of life and reinforcing Dubai as a global destination for citizens, residents and visitors, this document provides technical information and protective measures against harmful effects of EMF.

OBJECTIVES

The Technical Guideline on EMF aims to:

- Provide recommendations and best practices on EMF exposure
- Protect human health from harmful effects of EMF

EMF FROM POWER TRANSMISSION LINES

There are number of studies on potential health impacts of extremely low frequency EMF such as those from power transmission lines. The risk related to the long term exposure to extremely low frequency EMF and its link to the development of malignancy is not supported by the scientific studies (Government of Canada, 2020).

Figure 3 shows typical EMF levels from the transmission lines, commonly at a frequency of 50 Hz, at various distances from the power line. As shown in the figure, typical electric field and mean magnetic field levels away

from the transmission lines at 50 Hz are below the ICNIRP reference levels of 5 kV/m and 200 μ T (2,000 mG), respectively. These reference levels are calculated based on the applicable ICNIRP reference levels highlighted in Table 1. These data show that population located at a distance from power lines are exposed to EMF levels which are below exposure limits.

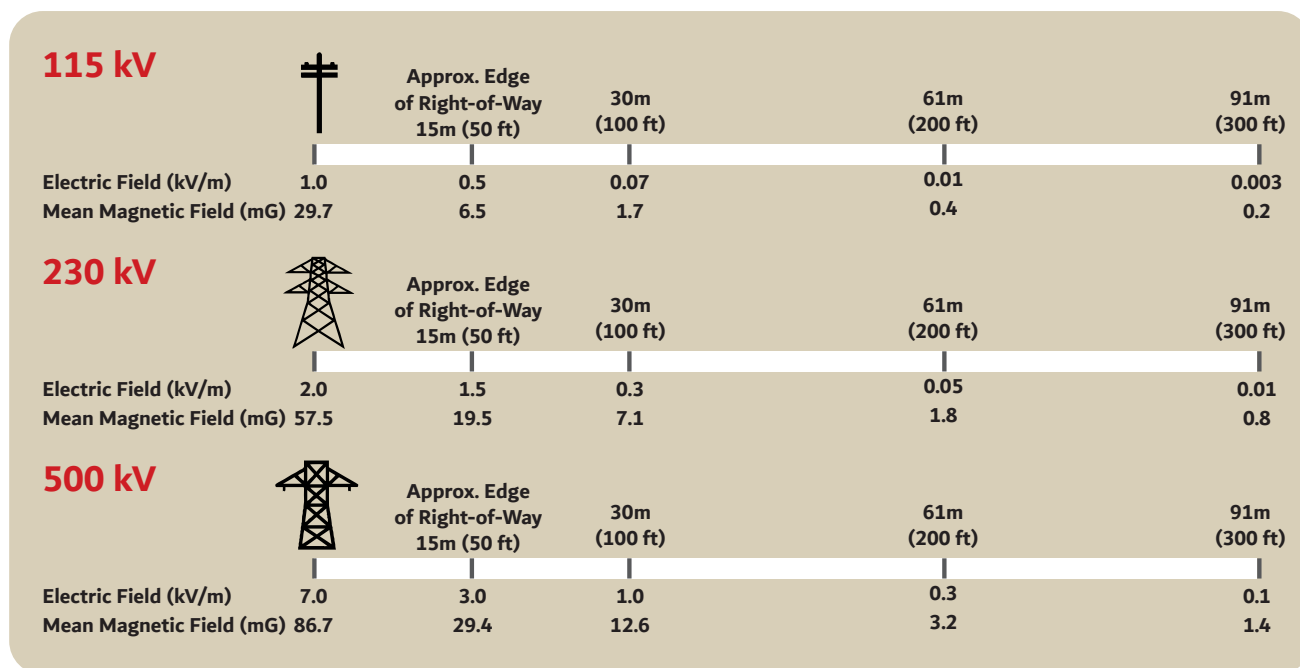


Figure 3: Typical EMF levels for power Transmission lines. (NIEHS/NIH, 2002)

Table 1: Reference levels for local exposure to time-varying electric and magnetic fields (ICNIRP, 2010)

Exposure	Frequency Range	E-field Strength, E (kV/m)	Magnetic Field Strength, H (A/m)	Magnetic Flux Density, B (T)
General Public	1 Hz - 8 Hz	5	$3.2 \times 10^4/f^2$	$4 \times 10^{-2}/f^2$
	8 Hz - 25 Hz	5	$4 \times 10^3/f$	$5 \times 10^{-3}/f$
	25 Hz - 50 Hz	5	1.6×10^2	2×10^{-4}
	50 Hz - 400 Hz	$2.5 \times 10^2/f$	1.6×10^2	2×10^{-4}
	400 Hz - 3 kHz	$2.5 \times 10^2/f$	$6.4 \times 10^4/f$	$8 \times 10^{-2}/f$
	3 kHz - 10 MHz	8.3×10^{-2}	21	2.7×10^{-5}
Occupational	1 Hz - 8 Hz	20	$1.63 \times 10^5/f^2$	$0.2/f^2$
	8 Hz - 25 Hz	20	$2 \times 10^4/f$	$2.5 \times 10^{-2}/f$
	25 Hz - 300 Hz	$5 \times 10^2/f$	8×10^2	1×10^{-3}
	300 Hz - 3 kHz	$5 \times 10^2/f$	$2.4 \times 10^5/f$	$0.3/f$
	3 kHz - 10 MHz	1.7×10^{-1}	80	1×10^{-4}

Notes:

- f in Hz
- 1 Tesla (T) = 1×10^4 Gauss (G)

EMF FROM TELECOMMUNICATIONS STRUCTURES

Energy from the radio frequency (RF) of typical telecommunication network and apparatus can be absorbed by the body and may lead to heating of body tissue. Risk of developing RF shocks or burns may also arise from physical contact with large, non-grounded conductor that is exposed to EMFs. The levels of RF absorption are

dependent on transmission frequency and field strength, the latter being dependent on distance from the source (UK HSE, 2001). WHO (2016) reports that the levels of transmission from a base station or telecommunication tower vary depending on the numbers of calls and callers' distance from the tower. Normally, any EMF limits or guidelines will be exceeded only if a person is within a meter or two directly in front of the antennas.

ICNIRP has established safety levels of EMFs at frequencies of 100 kHz to 300 GHz for both general population and occupational exposures (Table 2). Cellular bands are typically within this frequency range.

Table 2: Reference levels for local exposure, averaged over 6 min, to electromagnetic fields from 100 kHz to 300 GHz (ICNIRP, 2020)

Exposure	Frequency Range	Incident Electric Field Strength, V/m	Incident H-Field Strength, A/m	Incident Power Density, W/m ²
General Public	0.1 – 30 MHz	$671/f_M^{0.7}$	$4.9/f_M$	NA
	>30 – 400 MHz	62	0.163	10
	>400 – 2000 MHz	$4.72f_M^{0.43}$	$0.0123f_M^{0.43}$	$0.058f_M^{0.86}$
	>2 – 6 GHz	NA	NA	40
	>6 – 300 GHz	NA	NA	$55/f_G^{0.177}$
	300 GHz	NA	NA	20
Occupational	0.1 – 30 MHz	$1504/f_M^{0.7}$	$10.8/f_M$	NA
	>30 – 400 MHz	139	0.36	50
	>400 – 2000 MHz	$10.58f_M^{0.43}$	$0.0274f_M^{0.43}$	$0.29f_M^{0.86}$
	>2 – 6 GHz	NA	NA	200
	>6 – <300 GHz	NA	NA	$275/f_G^{0.177}$
	300 GHz	NA	NA	100

Notes:

- “NA” signifies “not applicable” and does not need to be taken into account when determining compliance
- f_M is frequency in MHz; f_G is frequency in GHz
- Refer to ICNIRP Guidelines (2020) for additional reference levels for other exposure scenarios

PROTECTIVE MEASURES

The following measures are recommended to protect or reduce exposure from EMFs:

- Increased distance between power lines or telecom tower and places where children can spend significant amounts of time to ensure that their mean exposure will not exceed limits
- Enforce restrictions on sitting new schools or sensitive facilities close to existing electric transmission lines or telecom towers
- Bury new power lines unless technically infeasible
- Assign buffer zones near residential areas, schools, and other sensitive facilities
- Install barriers around EMF sources to prevent unauthorized access to areas where exposure limits may be exceeded
- Set up warning or safety signs (see example in Figure 4) in conspicuous areas to avoid unauthorized access to areas with strong EMF sources
- Install shielding, changing wiring practices in distribution or transmission systems (split phasing, raising ground clearances, etc.)
- Use EMF measuring devices when working close to EMF sources



Figure 4. RF-EMF Warning

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Annex 6

Environmental Compliance
Conditions for Development and
Infrastructure Projects

Environmental Compliance Conditions for Development and Infrastructure Projects

General Environmental Compliance Conditions

1. Prior approval shall be secured from the Air Environment Sustainability and Environmental Assessment Section (AESEAS) for any modification / change in the Project or inclusion of new Projects components, or establishment of any additional facilities, such as temporary concrete batching plants, not covered by the Environmental Impact Assessment (EIA). The request of amendment of EC from the AESEAS should be made by the Project Owner at least thirty (30) days prior to the change.
2. The Environmental Clearance (EC) shall be renewed at least thirty (30) days prior to its expiry date. The renewal of the EC is subject to the compliance of the Project Owner and/or its appointed contractors and operator to the compliance conditions stipulated herein/or additional Project-specific requirements indicated in the issued EC, and payment of outstanding fees and penalties as a result of violations in the future, if any.
3. The EC does not exempt the Project Owner and/or its appointed contractors and operator from securing other government approvals or preclude other agencies/departments from enforcing their rules and regulations including but not limited to, permit for the Storage of Dangerous Goods, if any, from the Dubai Civil Defense.
4. All applicable DM permit requirements shall be obtained and complied with. These include, but not limited to, permit from the DM Waste Operations Department for the disposal of all wastes (e.g. solid, liquid, including sludge and hazardous waste).
5. All air and noise emissions to the environment shall comply with the applicable Environmental Laws and Regulations in the UAE and Emirate of Dubai.
6. Discharge of any wastewater / effluent generated from the Project implementation shall, at all times, comply with the applicable discharge limits/standards enforced by the concerned DM Departments.
7. All chemicals that shall be used for the buildings' maintenance, cooling system, firefighting equipment, among others, shall have zero ozone depletion potential (ODP) or low global warming potential (GWP).
8. All required sampling and analyses shall be conducted by the Dubai Central Laboratory (DCL) and/or any laboratory accredited by the Emirates International Accreditation Centre (EIAC).
9. A copy of the EC shall be kept at the Project site at all times. The Project Owner and/or its appointed contractors and operator shall allow access, and provide assistance to the authorised DM-ESD officers and engineers in carrying out inspections, incident investigations, taking of pictures, and in obtaining relevant information such as onsite sources of emissions and effluent discharges at anytime, except if it is unsafe to do so.
10. The construction and/ or operation activities shall not cause any environmental pollution or any complaints from the public and its adjacent communities. In case of environmental pollution and/or complaints, the Project Owner and/or its appointed contractors and operator shall implement appropriate corrective actions, settle environmental disputes, and bear all responsibilities on any environmental damages and cost for any remediation thereof.
11. Any environment-related incidents and complaints shall be reported immediately to the Environmental Control Section (ECS) within twenty-four (24) hours. The incident report shall describe the likely cause, the time of occurrence, and the conditions under which an incident occurred, the extent of impact, and the remedial actions undertaken. In such events, a registered Environmental Consultant shall be appointed to determine and supervise the necessary corrective actions to be undertaken, and conduct the necessary monitoring activities to ensure compliance to the prescribed standards.
12. A **semi-annual** Environmental Performance Report (EPR), including environmental protection measures implementation and monitoring, and a brief description with photo documentation of the construction progress (as applicable) shall be submitted to **ECS@dm.gov.ae** within seven (7) days after each reporting period. The subject of the email submission should indicate the reference number of the EC issued for the Project.

Specific Conditions for Projects with Odour Emitting Sources

The following compliance conditions shall be applicable for, but not limited to, Projects with sources of odourous gases such as Municipal Solid Waste Recovery or Recycling Facility, Landfill or Composting Facility, etc., in addition to the General Environmental Compliance Conditions (except for condition nos. 7 and 12):

13. Adequate controls and mitigation measures shall be implemented for all air emissions associated with the Project activities. All emissions to the air environment shall comply with the limits provided in the Cabinet Decree No. (12) of 2006. The ambient concentration of the below odourous gases shall not exceed the following limits at plot boundaries and nearby sensitive receptor(s).

Ambient Air (Odour)		
Parameter	Standard Limit	Source of Standard Limit
H ₂ S *	7 µg/m ³ (30-min averaging)	WHO
NH ₃ *	30 µg/m ³ (30-min averaging)	NIH, US
Dimethyl disulphide	56 µg/m ³ (10-min averaging)	Ontario's Ambient Air Quality Criteria
Dimethyl sulphide	30 µg/m ³ (10-min averaging)	
Methyl mercaptan	13 µg/m ³ (10-min averaging)	

*Continuous measurement for 24 hrs at plot boundary and nearby sensitive receptor(s)

14. Whenever a foul odour complaint arises, the Project Owner/Operator shall conduct an air quality monitoring of the parameters listed in condition no. 13 at the odour control unit exhaust, plot boundaries, and at nearby sensitive receptors, for at least 1-hour to 24-hours (continuous) extendable to seven (7) days. The monitoring instrument should have an averaging time of at least 10 minutes, including records of wind direction and valid calibration certificate.
15. A **semi-annual** Environmental Performance Report (EPR) including environmental protection measures implementation and monitoring and a brief description with photo documentation of the construction progress (as applicable). The EPR should include quarterly air quality monitoring report for the parameters listed in condition no. 13 with the meteorological data and monitoring location map. The EPR shall be submitted to **ECS@dm.gov.ae** within seven (7) days after each reporting period. The subject of the email submission should indicate the reference number of the EC issued for the Project.

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Specific Conditions for Fuel Filling Stations

In addition to the General Environmental Compliance Conditions (except for condition nos. 7 and 12), the following conditions shall be applicable:

16. The fuel storage tanks and fuel dispensing equipment shall be provided with adequate vapour recovery systems (VRS Stages 1 & 2) and shall be operated and maintained in accordance with manufacturer's recommendations.
17. All chemicals that will be used for the buildings' maintenance and firefighting equipment, including the refrigerant for the VRS shall have zero ozone depletion potential (ODP) or low global warming potential (GWP).
18. All measures to prevent and/or control the spillage / leaks of petroleum products and chemicals from all relevant activities during the operation shall be implemented based on the Environmental Management Plan (EMP) framework in the approved EIAS.

Specific Conditions for Coastal/Marine Projects

In addition to the General Environmental Compliance Conditions (except for condition no. 12), the following conditions shall be applicable:

19. A construction No Objection Certificate (NOC) shall be obtained from the Beaches and Waterways Development Section (under Public Beaches and Waterways Department) prior to commencement of any marine construction works, which should include a Construction Environmental Control Plan (CECP).

20. Any liquid fuel, oil and chemical shall be stored within impermeable secondary containment (bunded area). For a single-walled fuel tank, the secondary containment shall be at least 110% of the tank. For multiple drums and containers, the secondary containment must be 110% of the largest drum or 25% of the combined full capacity of all drums and containers. Spill kits must be located close to the designated storage area, and must be appropriate for the quantity and type of chemicals, oil and fuel stored on site.
21. Lightweight non-hazardous construction waste (paper, plastic, polystyrene) shall only be stored in bins and containers with lids, and they shall be emptied regularly to prevent overfilling and spilling. Similarly, they will be transported in closed waste trucks.
22. Hazardous waste shall temporarily be stored on site within a bunded area with impermeable surface, no connection to the drainage network or a surface water body. In the event of a spill, contaminated sand/soil shall be excavated immediately, and temporarily stored on site at the designated hazardous waste area. All hazardous waste shall be collected and disposed of at a licensed landfill for hazardous waste, by a licensed DM-approved waste contractor. Chain of custody records of collection and disposal of the contaminated soil as hazardous waste shall be retained on site.
23. A **quarterly** Environmental Performance Report (EPR) including but not limited to, environmental protection measures implementation and monitoring, monthly laboratory analysis results, monitoring locations, and a brief description with photo documentation of the construction progress shall be submitted to **EPR@dm.gov.ae** within seven (7) days after each reporting period. The subject of the email submission should indicate the reference number of the EC issued for the Project.

Specific Conditions for Projects Near, Beside, or Within the Protected or Conservation Area or Environmentally Sensitive Area

In addition to the General Environmental Compliance Conditions (except for condition no. 12), the following conditions shall be applicable:

24. A No Objection Certificate (NOC) shall be obtained from the Natural Reserves Section (NRS) prior to commencement of any activities within the Protected or Conservation Area.
25. A Translocation Plan for the species that will be impacted by the Project shall be submitted to the NRS within thirty (30) days from the date of issuance of the EC.
26. Implement necessary measures to protect any fauna or flora with conservation status categorised higher than "Least Concern" encountered during the Project implementation as per requirements of NRS Technical Guideline on the Translocation, Handling, and Restoration of Wildlife in the Emirate of Dubai.
27. Any ecological-related incident shall be reported to the NRS within twenty-four (24) hours. The incident report shall describe the likely cause, the time of occurrence, and the conditions under which an incident occurred, the extent of impact, and the remedial actions undertaken. In such events, a registered Environmental Consultant shall be appointed to determine and supervise the necessary corrective actions to be undertaken, and conduct the necessary monitoring activities to ensure compliance to the prescribed standards.
28. A **semi-annual** Environmental Performance Report (EPR), including but not limited to, environmental protection measures implementation and monitoring, monthly laboratory analysis results, monitoring locations, and a brief description with photo documentation of the construction progress shall be submitted within seven (7) days after each reporting period. For Projects located within the protected or conservation area, EPR should be submitted to **NRS@dm.gov.ae**. For Projects located near or beside the protected or conservation area or in an environmentally sensitive area, EPR should be submitted to **ECS@dm.gov.ae**. The subject of the email submission should indicate the reference number of the EC issued for the Project.

Specific Conditions for Projects with Permanent Lagoon, Lake or Man-made Surface Water Features:

In addition to the General Environmental Compliance Conditions, the following conditions shall be applicable:

29. The establishment or operation of closed permanent lagoon, lake, or man-made surface water features

(hereafter collectively referred to as “lagoon”) shall be carried out only after obtaining the necessary Environmental Clearance (EC) from DM-ESD.

30. Periodic maintenance shall be carried out to ensure that the water quality is maintained within the allowable limits specified in the Environmental Standards as per the following table:

Environmental Standards for Water Quality of Closed Lagoons

No.	Parameter		Measurement Unit	Maximum Allowable Limits
Physical/ Chemical Parameters				
1	Ammonium in the form of Nitrogen	NH ₄ -N	mg/L	<5
2	Biochemical Oxygen Demand (5-days)	BOD ₅	mg/L	10
3	Chemical Oxygen Demand	COD	mg/L	50
4	Dissolved oxygen from the surface and up to 2 meters (m) from the bottom	DO	mg/L	5 - 15
5	Dissolved oxygen at the bottom	DO	mg/L	>4
6	Fluorine	F	mg/L	20
7	Nitrate in the form of Nitrogen	NO ₃ N	mg/L	15
8	Oils & Grease		mg/L	<10
9	pH		-	6 – 9
10	Phenols		mg/L	0.001
11	Phosphate in the form of Phosphorus	PO ₄ P	mg/L	<5
12	Sulphide in the form of Sulphur	S ⁻²	mg/L	0.1
13	Cyanide	CN	mg/L	0.05
14	Surface Plankton		mg/L	0.02
15	Total Suspended Solids	TSS	mg/L	50
16	Turbidity		NTU	75
Metals				
17	Aluminum	Al	mg/L	5
18	Arsenic	As	mg/L	0.05
19	Cadmium	Cd	mg/L	0.05
20	Chromium (Chromium 6)	Cr	mg/L	0.05
21	Cobalt	Co	mg/L	0.2
22	Copper	Cu	mg/L	0.5
23	Total Iron	Fe	mg/L	2
24	Lead	Pb	mg/L	0.1
25	Manganese	Mn	mg/L	0.2
26	Mercury	Hg	mg/L	0.001
27	Molybdenum	Mo	mg/L	0.01
28	Nickel	Ni	mg/L	0.1
29	Selenium	Se	mg/L	0.02
30	Silver	Ag	mg/L	0.005
31	Zinc	Zn	mg/L	0.1

31. No gases that impart foul odour shall be emitted beyond the applicable allowable limits as per the laws, regulations, and legislations in the Emirate of Dubai.

32. An increase in algal growth that may cover the water surface shall be prevented and controlled.
33. The growth of plants and grasses, which can distort the aesthetic view of the lagoon and can cause generation of unpleasant odour, shall be prevented and controlled.
34. Necessary approval shall be secured from the Sewerage and Recycled Water Projects Department for the Design and Operation of permanent storm water retention ponds/lagoons/lakes that are connected to the DM network as per Local Order No. (8) of 2002 Regarding the Sewerage, Irrigation and Water Drainage in the Emirate of Dubai.
35. Necessary approval shall also be secured from Health and Safety Department for the lagoon.
36. Relevant conditions and standards related to animal health shall be taken into consideration in cases when there are identified organisms or species of concern in the area where the lagoon is located.
37. The water from the lagoon shall not be discharged or replaced without the applicable permit issued by the DM Waste Operations Department (DM-WOD).
38. The sludge and sediment in the lagoon shall not be disposed without the applicable permit issued by the DM Waste Operations Department (DM-WOD).
39. Environmental status report regarding the lagoon shall be submitted to **ECS@dm.gov.ae** as part of the EPR.
40. The Project Owner / Operator of the lagoon shall take samples and carry out analysis through any laboratory accredited by the Emirates International Accreditation Centre (EIAC) for the specific environmental tests, to measure the levels of the concentrations of the odorous elements in order to verify the compliance with all the environmental requirements and standards. The Project Owner / Operator shall bear all the cost related to the monitoring and analysis of environmental samples. The monitoring report shall be submitted to **ECS@dm.gov.ae** on a quarterly basis.





ANNEXURES FOR INDUSTRIAL PROJECTS

Annex 1

Comprehensive List of Industrial Activities
(Categories A, B and C)

PART 1 - List of Major Industrial Activities (Category A)

Activity Name	License Type	Old Activity Code	New Activity Code
Farming of cows	Professional	12101	141001
Farming of Poultry	Professional	12201	146001
Egg Production	Professional	12203	146002
Organic Waste & Garbage Treatment	Industrial	153303	1080005
Paper Manufacturing	Industrial	210100	1701002
Fuel Production	Industrial	232001	1920001
Petroleum Gas Liquefaction	Industrial	232003	1920002
Asphalt & Paving Materials Manufacturing	Industrial	232006	1920005
Grease & Lubricants Manufacturing	Industrial	232007	1920008
Natural Gas Liquefaction	Industrial	232002	1920013
Sulfur Manufacturing	Industrial	241103	2011003
Petrochemical Manufacturing	Industrial	241104	2011004
Gas Liquefaction & Manufacturing	Industrial	241105	2011005
Composed Industrial Chemicals Manufacturing	Industrial	241108	2011010
Acid Manufacturing	Industrial	241101	2011014
Organic Fertilizer Manufacturing	Industrial	241202	2012001
Chemical Fertilizers Manufacturing	Industrial	241201	2012007
Agricultural Pesticides Manufacturing	Industrial	242102	2021002
Paint Manufacturing	Industrial	242201	2022001
Anti Corrosion Materials Manufacturing	Industrial	242203	2022002
Insulation Materials Manufacturing	Industrial	242204	2022003
Synthetic Resins Manufacturing	Industrial	241109	2029005
Oilfields Chemicals Manufacturing	Industrial	242904	2029011
Rubber Products Manufacturing	Industrial	251901	2219001
Clinker Manufacturing	Industrial	269512	2394001
Cement Manufacturing	Industrial	269501	2394005
Precast Building Manufacturing	Industrial	269507	2395001
Ready Mixed Concrete Manufacturing	Industrial	269506	2395002
Iron and Steel Smelter	Industrial	271001	2410103
Aluminum Smelter	Industrial	272001	2420002
Aluminum Extrusion	Industrial	289102	2591002
Batteries Manufacturing	Industrial	314001	2720001
Dry batteries Manufacturing	Industrial	314002	2720002
Dry Docks Operations	Industrial	351102	3315008
Production & Distribution of Gas	Industrial	402001	3520001
Organic Fuel Production	Industrial	401003	3821002
Landfill Waste Gas Recovery	Industrial	402002	3821003
Battery Recycling	Industrial	371002	3830103
Recycling of Waste Electrical and Electronic Equipment	Industrial	371003	3830106
Lubricant Waste Recycling	Industrial	372003	3830902
Sewage Grease Treatment	Industrial	372009	3830911
Solvents Waste Recycling	Industrial	372010	3830913
Crude Fiber Glass Manufacturing	Industrial	241303	2013002
Power Generation *	Industrial	401001	3510001

Activity Name	License Type	Old Activity Code	New Activity Code
Electricity Transmission & Supply *	Industrial	401002	3510002
Crude Petroleum Extraction *	Industrial	111001	610001
Natural Gas Extraction *	Industrial	111002	620001
Marine Mining *	Industrial	142903	899001
Oil & Natural Gas Well Drilling *	Industrial	112001	910001
Oil & Natural Gas Well Maintenance *	Industrial	112002	910002

Note: For activities marked with *, the Applicant is required to submit the Environmental Clearance (EC) application through the service "Request for Environmental Clearance for Development and Infrastructure Projects" (<https://hub.dm.gov.ae/link/servicedetails?ServiceCode=3486>); also refer to Volume 2 – Guidance for Development and Infrastructure Projects.

PART 2 - List of Medium Industrial Activities (Category B)

Activity Name	License Type	Old Activity Code	New Activity Code
Farming of Sheep & Goats	Industrial	012102	144001
Charcoal Production & Packaging	Industrial	020001	220001
Sand Quarrying	Industrial	141002	810005
Pebble Quarrying	Industrial	141003	810006
Gypsum Mining	Industrial	141004	810007
Limestone Quarrying	Industrial	141001	810008
Natural Manures Extraction	Industrial	142901	891004
Salt Extraction	Industrial	142202	893001
Slaughtering & Meat Preparing	Industrial	151101	1010101
Meat Products Manufacturing	Industrial	151104	1010102
Poultry Slaughtering & Processing	Industrial	151102	1010901
Poultry Products Manufacturing	Industrial	151105	1010902
Vegetable Oil Production & Refining	Industrial	151401	1040101
Vegetable Ghee Manufacturing	Industrial	151403	1040102
Animal Oil & Fat Manufacturing	Industrial	151402	1040201
Dairy Products Manufacturing & Packing	Industrial	152001	1050001
Butter Manufacturing	Industrial	152002	1050002
Cheese Manufacturing	Industrial	152003	1050003
Crude Sugar Refining	Industrial	154201	1072001
Salt Refining	Industrial	142201	1079002
Fodder Manufacturing	Industrial	153301	1080001
Yarn, Textiles Dyeing & Processing	Industrial	171102	1311007
Hides Tanning	Industrial	191101	1511001
Tar Manufacturing	Industrial	232004	1910002
Petroleum Gas Bottling	Industrial	232005	1920003
Lubricants & Grease Refilling	Industrial	232008	1920014
Grease & Lubricants Blending	Industrial	232009	1920015
Chlorinated Paraffin Oil Manufacturing	Industrial	241110	1920016
Ammonia & Caustic Soda Manufacturing	Industrial	241102	2011001
Dry Ice Manufacturing	Industrial	241106	2011006
Water Treatment & Purification Chemicals Manufacturing	Industrial	242910	2011015
Chemicals Blending	Industrial	241111	2011016
Crude Plastic Manufacturing	Industrial	241301	2013001
Ink & Printing Materials Manufacturing	Industrial	242206	2022007

Activity Name	License Type	Old Activity Code	New Activity Code
Industrial Solvents Manufacturing	Industrial	242404	2023007
Gum & Glue Manufacturing	Industrial	241107	2029006
Fireworks Manufacturing	Industrial	369917	2029023
Medicine Manufacturing	Industrial	242301	2100101
Vaccines & Inoculants Manufacturing	Industrial	242302	2100102
Medicinal Chemicals Manufacturing	Industrial	242303	2100105
Veterinary Medicine Manufacturing	Industrial	242304	2100106
Wool Glass Manufacturing	Industrial	261003	2310004
Fiber Glass Products Manufacturing	Industrial	261004	2310005
Bricks Manufacturing	Industrial	269502	2391002
Clay Bricks Manufacturing	Industrial	269201	2392002
Constructional Clay Products Manufacturing	Industrial	269202	2392005
Mosaic Tiles Manufacturing	Industrial	269504	2392006
Concrete Blocks Manufacturing	Industrial	269509	2392007
Interlock Tiles Manufacturing	Industrial	269510	2392008
Ceramic Tiles Manufacturing	Industrial	269203	2393003
Concrete Tiles Manufacturing	Industrial	269503	2394002
Kerb Stones Manufacturing	Industrial	269505	2394003
Lime Manufacturing	Industrial	269902	2394004
Cement Products Manufacturing	Industrial	269508	2395005
Gypsum Manufacturing	Industrial	269904	2395007
Gypsum Products Manufacturing	Industrial	269905	2395008
Precast Concrete Tanks Fabrication	Industrial	269511	2395011
Concrete Floating Structures Manufacturing	Industrial	269603	2395012
Concrete Cloth Manufacturing	Industrial		2395013
Artificial Marble Manufacturing	Industrial	269910	2396001
Quarries	Industrial	269601	2396003
Steel Bars Manufacturing	Industrial	271002	2410901
Silver Extraction From Chemical Wastes	Industrial	272002	2420004
Gold Refinery	Industrial	273205	2420008
Copper Rod Casting	Industrial	272003	2420009
Cast Iron Manufacturing	Industrial	273102	2431001
Steel Tubes & Fittings Manufacturing	Industrial	273104	2431002
Steel Pipes & Fitting Manufacturing	Industrial	273101	2431004
Gold & Precious Metal Casting	Industrial	273201	2432001
Non-Ferrous Metal Casting	Industrial	273202	2432002
Iron & Steel Rolling	Industrial	289101	2591001
Aluminum Rolling	Industrial	289103	2591003
Aluminum Powder Production	Industrial	289104	2591004
Aluminum Alloy Hardener Tablets Manufacturing	Industrial	289106	2591006
Metal Products Coating	Industrial	289201	2592001
Metal Products Coating With Precious Metals	Industrial	289203	2592002
Structural Steel Coating & Treatment	Industrial	289202	2592003
Pipelines Coating	Industrial	269908	2592008
Products Coating	Industrial	289204	2592102
Cooking Oil Mobile Microfiltration	Industrial	372007	3821004
Pressurized Cans Recycling	Industrial		100032

Activity Name	License Type	Old Activity Code	New Activity Code
Fish & Seafood Canning & Preserving	Industrial	151201	1020001
Fish & Seafood Processing Vessels	Industrial	151203	1020003
Tomato Paste Manufacturing	Industrial	151304	1030003
Potato Chips Manufacturing	Industrial	151311	1030006
Fruit Juices Manufacturing	Industrial	151303	1030009
Date Products Manufacturing	Industrial	151316	1030011
Jam Manufacturing	Industrial	151308	1030012
Pickle Processing	Industrial	151309	1030013
Yogurt Manufacturing	Industrial	152004	1050004
Cream of Milk Manufacturing	Industrial	152005	1050005
Ice Cream Manufacturing	Industrial	152006	1050006
Cereal Food Manufacturing	Industrial	153103	1061003
Cheese Balls Manufacturing	Industrial	151314	1061010
Gum Powder Manufacturing	Industrial	153106	1061101
Bakery Products Manufacturing	Industrial	154101	1071001
Pastry & Sweets Manufacturing	Industrial	154102	1071002
Biscuits Manufacturing	Industrial	154103	1071005
Sugar Cubes Manufacturing	Industrial	154202	1072002
Cocoa & Chocolate Candies Manufacturing	Industrial	154302	1073102
Sugar Candies Manufacturing	Industrial	154301	1073901
Sesame Halva Manufacturing	Industrial	154303	1073902
Pasta & Macaroni Manufacturing	Industrial	154401	1074001
Baby Food Manufacturing	Industrial	154910	1079011
Flavors & Fragrances Manufacturing	Industrial	154911	1079012
Mayonnaise Manufacturing	Industrial	154916	1079013
Liquid Pasteurized Egg Production	Industrial	154914	1079014
Hot Sauce Manufacturing	Industrial	154917	1079015
Vinegar Manufacturing	Industrial	154912	1079017
Tahina Manufacturing	Industrial	154921	1079018
Soup Manufacturing	Industrial	154909	1079022
Foods Containing Homogenized Ingredients Manufacturing	Industrial	154930	1079029
Food Supplements Manufacturing	Industrial	154929	1079030
Natural (Organic) Food Manufacturing	Industrial	154915	1079031
Frozen Coca Cubes Melting	Industrial	154928	1079101
Animal & Birds Feed Manufacturing	Industrial	153302	1080002
Non- Alcoholic Malt Beverage Manufacturing	Industrial	155405	1104101
Mineral Water Bottling	Industrial	155401	1104201
Purification of Potable Water	Industrial	410001	3600004
Carbonated Water Manufacturing	Industrial	155402	1104203
Soft Drinks Manufacturing	Industrial	155403	1104204
Fruit Flavored Drinks Manufacturing	Industrial	155404	1104902
Iced Tea Manufacturing	Industrial	155406	1104907
Cigarettes Manufacturing	Industrial	160001	1200001
Treated Tobacco Manufacturing	Industrial	160002	1200002
Cotton, Wool Spinning & Weaving	Industrial	171101	1312001
Tents, Awnings & Tarpaulin Manufacturing	Industrial	172101	1392001

Activity Name	License Type	Old Activity Code	New Activity Code
Carpets Manufacturing	Industrial	172201	1393001
Nets Manufacturing	Industrial	172301	1394002
Special Purpose Fabrics & Fibers Manufacturing	Industrial	172901	1399001
Manufacture of Other Textiles	Industrial	172900	1399015
Men's Underwear Manufacturing	Industrial	181001	1410101
Men's Garments Manufacturing	Industrial	181002	1410102
Children Wears Manufacturing	Industrial	181003	1410104
Children's underwear Manufacturing	Industrial	181004	1410105
Ladies' Garments Manufacturing	Industrial	181005	1410106
Ladies' underwear manufacturing	Industrial	181006	1410107
Arabic Gown Manufacturing	Industrial	181008	1410110
Protective Garments & Vest Manufacturing	Industrial	181009	1410111
Sports Wears Manufacturing	Industrial	181010	1410112
Uniforms Manufacturing	Industrial	181011	1410113
Jackets & Overcoats Manufacturing	Industrial	181012	1410114
Gloves Manufacturing	Industrial	181013	1410115
Socks Manufacturing	Industrial	172103	1410116
Caps & Headwear Manufacturing	Industrial	181007	1410117
Suitcases Manufacturing	Industrial	191201	1512001
Hand Bags, Wallets & Belts Manufacturing	Industrial	191202	1512002
Shoes Manufacturing	Industrial	192001	1520001
Slippers & Sandals Manufacturing	Industrial	192002	1520002
Plywood Manufacturing	Industrial	201001	1610001
Wood Drying & Processing	Industrial	201003	1610006
Wooden Doors & Windows Manufacturing	Industrial	202201	1622001
Pre-Fabricated Buildings Manufacturing	Industrial	202202	1622004
Wooden Decor Products Manufacturing	Industrial	202203	1622005
Wooden Cable Reels Manufacturing	Industrial	202205	1623002
Wooden Boxes & Containers Manufacturing	Industrial	202301	1623003
Wooden Pallets Manufacturing	Industrial	201002	1623005
Bamboo, Cane & Wicker Products Manufacturing	Industrial	202902	1629104
Melamine Impregnated Paper sheets Manufacturing	Industrial	210908	1701101
Commercial Publications Printing	Industrial	222101	1811001
Newspapers Printing	Industrial	222102	1811003
Books Printing	Industrial	222103	1811004
Post Stamps Printing	Industrial	222104	1811005
Cards & Envelopes Printing	Industrial	222105	1811006
Magazine Printing	Industrial	222107	1811007
Plastic Cards Printing	Industrial	222109	1811014
Security Documents Printing	Industrial	222111	1811015
Integrated Printing Press	Industrial	222112	1811017
Color Separation Services	Professional	222203	1812008
Ink Mixing & Refilling	Industrial	242207	2022008
Varnish Manufacturing	Industrial	242202	2022009
Soap & Hair Care Products Manufacturing	Industrial	242401	2023001
Powder Detergents Manufacturing	Industrial	242405	2023002
Bleaching Products Manufacturing	Industrial	242407	2023003

Activity Name	License Type	Old Activity Code	New Activity Code
Detergents & Disinfectants Manufacturing	Industrial	242402	2023006
Cosmetics Manufacturing	Industrial	242408	2023012
Tooth & Mouth Care Products Manufacturing	Industrial	242409	2023013
Cosmetics & Personal Care Preservatives Manufacturing	Industrial	242909	2023019
Fire Extinguishing Materials Manufacturing	Industrial	242901	2029001
Adhesives Manufacturing	Industrial	242205	2029007
Construction Chemicals Manufacturing	Industrial	242903	2029010
Coolants Manufacturing	Industrial	242905	2029014
Batteries Distilled Water Manufacturing	Industrial	242906	2029015
Wax Candles Manufacturing	Industrial	242907	2029016
Test & Analysis Chemicals Manufacturing	Industrial	242908	2029018
Purification Materials Manufacturing	Industrial	242912	2029024
Laboratory Diagnostics Reagents Manufacturing	Industrial	242307	2029101
Medical & Surgical Requisites Manufacturing	Industrial	242305	2100107
Preparation of Botanical Products for Pharmaceutical Use	Industrial	242308	2100901
Tyre Retreading	Industrial	251101	2211003
Rubber Products Manufacturing	Industrial	251901	2219001
Synthetic Sponge Manufacturing	Industrial	251902	2219005
Flooring Materials & Mats Manufacturing	Industrial	251903	2219006
Sponge Products Manufacturing	Industrial	251904	2219008
Disposable Plastic Cutlery Manufacturing.	Industrial	252001	2220001
Plastic Utensils Manufacturing	Industrial	252002	2220002
Plastic Pipes & Fitting Manufacturing	Industrial	252003	2220003
Plastic Sheets Manufacturing	Industrial	252004	2220006
Plastic Bags Manufacturing	Industrial	252005	2220008
Carpet Underline Padding Manufacturing	Industrial	252017	2220014
Plastic Films Manufacturing	Industrial	252006	2220015
Plastic Cards & Fulfilment Products Manufacturing	Industrial	252015	2220020
Plastic Buckets & Pots Manufacturing	Industrial	252011	2220024
Plastic Bottles & Containers Manufacturing	Industrial	252007	2220025
Architectural , Advertising & Decorative Models Manufacturing	Industrial	369914	2220027
Plastic Syringes Manufacturing	Industrial	252008	2220030
Plastic Building Products Manufacturing	Industrial	252012	2220033
Plastic Caps & Lids Manufacturing	Industrial	252013	2220035
Thermal Plastic Utensils Manufacturing	Industrial	252016	2220042
Building Plastic Products Manufacturing	Industrial	252014	2220047
Fire Fighting Pipes Manufacturing	Industrial	273105	2220051
Blinds Manufacturing	Industrial	361008	2220101
Baby Care Products Manufacturing	Industrial	369915	2220102
Glassware Manufacturing	Industrial	261001	2310001
Safety Glass Manufacturing	Industrial	261002	2310002
Glass Sheets & Mirror Manufacturing	Industrial	261005	2310007
Stained Glass Forming	Industrial	261006	2310008
Glass Bottles & Containers Manufacturing.	Industrial	261007	2310009
Reflective, Enameled & Insulant Glass Production	Industrial	261008	2310011

Activity Name	License Type	Old Activity Code	New Activity Code
Perlite Products Manufacturing	Industrial	269912	2310016
Crystal Products Processing	Professional	261009	2310017
Non-Structural & Non Refractory Ceramic Ware Manufacturing	Industrial	269100	2393005
Chalk Manufacturing	Industrial	269903	2395010
Marble Cutting, Grinding & Polishing	Industrial	269602	2396004
Wall Coating Materials Manufacturing	Industrial	269909	2399005
False Ceiling Manufacturing	Industrial	269907	2399006
Polyurethane Ornamental Moldings Manufacturing	Industrial	269911	2399007
Fire Resistant & Retardant Materials Manufacturing	Industrial	269913	2399009
Steel & Alloy Products Cutting	Industrial	271003	2410902
Weighing Materials Manufacturing	Industrial	273203	2432003
Reinforcement Steel Bars Fabrication	Industrial	281110	2511001
Structures & Structural Steel Manufacturing	Industrial	281101	2511002
Steel Hangars & Sheds Manufacturing	Industrial	281102	2511003
Building Metal Products Manufacturing	Industrial	281103	2511004
Garbage Chutes Manufacturing	Industrial	281115	2511007
Fire Resistant Doors Manufacturing	Industrial	281118	2511008
Rigs & Oilfield Platform Manufacturing	Industrial	281104	2511009
Scaffolds & Ladders Manufacturing	Industrial	281105	2511010
Central Air-Conditioning Requisites Manufacturing	Industrial	281106	2511011
Metal False Ceilings Manufacturing	Industrial	281107	2511013
Expanded Metal Components Manufacturing.	Industrial	281109	2511014
Metal Partitions Manufacturing	Industrial	361009	2511016
Metal Doors & Windows Manufacturing	Industrial	281112	2511017
Fire Rated Ducts Manufacturing	Industrial	281117	2511018
Modular Fabrication & Assembly	Industrial	281122	2511019
Building Stainless Steel Products Manufacturing	Industrial	281113	2511101
Metal Doors, Windows Making & Fixing	Industrial	281119	2511102
Tanks Manufacturing	Industrial	281201	2512001
Silos Manufacturing	Industrial	281202	2512002
Pressure Vessels Manufacturing	Industrial	281203	2512005
Boilers Manufacturing	Industrial	281204	2512006
Plate Heat Exchangers Assembling	Industrial	291920	2513101
Hand Tools Manufacturing	Industrial	289301	2593002
Cutting & Shearing Tools Manufacturing	Industrial	289304	2593005
Sawing Discs & Cutting Blades Manufacturing	Industrial	289305	2593006
Locks & Keys Manufacturing	Industrial	289303	2593009
Iron mongery Manufacturing	Industrial	289302	2593010
Tin Cans & Containers Manufacturing	Industrial	289904	2599101
Trunks Manufacturing	Industrial	289906	2599102
Metal Drums & Barrels Manufacturing	Industrial	289905	2599103
Metal Utensils Manufacturing	Industrial	289901	2599106
Metal Caps & Seals Manufacturing	Industrial	289913	2599107
Gas Cylinders Manufacturing	Industrial	289916	2599109
Metal Buckets Manufacturing	Industrial	289911	2599110
Metal Ropes Manufacturing	Industrial	289912	2599111

Activity Name	License Type	Old Activity Code	New Activity Code
Welding Bars Manufacturing	Industrial	289914	2599112
Traffic Signs Manufacturing	Industrial	289903	2599113
Metal Chambers Manufacturing	Industrial	289925	2599115
Planters Manufacturing	Industrial	369908	2599116
Steel Wool Manufacturing	Industrial	289920	2599117
Metal Sections Manufacturing	Industrial	289922	2599118
Printing Cylinders Manufacturing	Industrial	289929	2599119
Cable Trays, Cross Arms & Accessories Manufacturing	Industrial	289926	2599122
Egg Incubators Manufacturing	Industrial	289927	2599123
Fishing Cages Manufacturing	Industrial	289931	2599127
Steel Cable Reels Manufacturing	Industrial	289935	2599128
Cutlery Manufacturing	Industrial	289306	2599129
Oilfield Drilling Equipment & Components Manufacturing	Industrial	281116	2599130
Exhibition Stands Manufacturing	Industrial	289928	2599131
Blasting & Painting Rooms Manufacturing	Industrial	289936	2599132
Aluminum Foils Manufacturing	Industrial	289917	2599201
Disposable Aluminum Plates & Containers Manufacturing	Industrial	289921	2599203
Insulation Metal Panels Manufacturing	Industrial	281120	2599305
Offset Printing Plates Manufacturing	Industrial	289923	2599306
Leaf Spring Manufacturing	Industrial	343003	2599307
Bolts, Nuts, Screws & Nails Manufacturing	Industrial	289902	2599401
Metal Wires Manufacturing	Industrial	289907	2599901
Gabions Manufacturing	Industrial	289908	2599902
Barbed Wire Manufacturing	Industrial	289909	2599903
Chains Manufacturing	Industrial	289910	2599904
Metal Grating Manufacturing	Industrial	281111	2599905
Electronic Tubes Manufacturing	Industrial	321001	2610002
Electric Motors & Generators Manufacturing	Industrial	311001	2710001
Power Transformers Manufacturing	Industrial	311002	2710003
Power Distribution Panels Manufacturing	Industrial	312003	2710008
Power Distribution Equipment Manufacturing	Industrial	312001	2710010
Solar Panels Manufacturing	Industrial	311005	2710012
Power Control Switchgears Manufacturing	Industrial	312002	2710014
Energy storage units Manufacturing	Industrial	314003	2720004
Fiber Optic Cables & Wires Manufacturing	Industrial	313004	2731001
Power Distribution Cables Manufacturing	Industrial	313001	2732001
Power Supply Wires Manufacturing	Industrial	313002	2732002
Conductors & Cable Joints Manufacturing	Industrial	313006	2732003
Telecommunication Wires Manufacturing	Industrial	313003	2732004
Neon Signs Manufacturing	Industrial	315003	2740007
Refrigerators, Freezers & Water Coolers Manufacturing	Industrial	293003	2750001
Washing Machines & Dryers Manufacturing	Industrial	293004	2750004
Cookers & Cook Stoves Manufacturing	Industrial	291401	2750005
Electric Water Heaters Manufacturing	Industrial	293002	2750006

Activity Name	License Type	Old Activity Code	New Activity Code
Electrical Home Appliances Manufacturing	Industrial	293006	2750007
Kitchen Appliances Manufacturing	Industrial	293005	2750009
Heat Elements Manufacturing	Industrial	319002	2790006
Turbines Manufacturing	Industrial	291101	2811001
Engine Spare Parts Manufacturing	Industrial	291102	2811006
Pumps Manufacturing	Industrial	291201	2813001
Valves Manufacturing	Industrial	291202	2813003
Bearing & Gears Manufacturing	Industrial	291301	2814001
Food Heating Burners Manufacturing	Industrial	291402	2815004
Crane Manufacturing	Industrial	291502	2816002
Handling, Loading & Lifting Equipment Manufacturing	Industrial	291501	2816006
Access Cradles Manufacturing	Industrial	291503	2816010
Conveyor & Transmission Belts Manufacturing	Industrial	291504	2816011
Elevators & Escalators components Manufacturing	Industrial	291506	2816012
Water Treatment Equipment Manufacturing	Industrial	291924	2819110
Split Air Conditioner Manufacturing	Industrial	291905	2819201
Air Conditioner Units Manufacturing	Industrial	291906	2819202
Central Air-Conditioning Equipment Manufacturing	Industrial	291910	2819205
Ventilation Equipment Manufacturing	Industrial	291907	2819206
Cold Storage Compartment Manufacturing	Industrial	291908	2819207
Fire Fighting & Safety Equipment Manufacturing	Industrial	291923	2819904
Automatic Gates & Barriers Manufacturing	Industrial	291909	2819906
Energy Efficient Equipment Manufacturing	Industrial	292908	2819908
Plate Heat Exchangers Manufacturing	Industrial		2819909
Agricultural Tractors Manufacturing	Industrial	292101	2821001
Auto Irrigation Devices Manufacturing	Industrial	292102	2821004
Precision Dies Manufacturing	Industrial	273103	2823003
Oil & Gas Fields Equipment Manufacturing	Industrial	281108	2824010
Construction Equipment & Spare Parts Manufacturing	Industrial	281114	2824011
Sewing Machines & Accessories Manufacturing	Industrial	292601	2826007
Specialized Industrial Machinery & Equipment Manufacturing	Industrial	292901	2829011
Specialized Precision Equipment Manufacturing	Industrial	292902	2829012
Cleanroom Systems Manufacturing	Industrial	292905	2829015
Motor Vehicles Manufacturing	Industrial	341005	2910101
Trailers Manufacturing	Industrial	342002	2920101
Refrigerated Trailers Manufacturing	Industrial	342003	2920102
Tanker Manufacturing	Industrial	342004	2920103
Mobile Concrete Mixers Manufacturing	Industrial	342005	2920104
Cargo Container Manufacturing	Industrial	281205	2920106
Garbage & Waste Collection Containers Manufacturing.	Industrial	289924	2920107
Vehicles Bodies Manufacturing	Industrial	342001	2920901
Trucks Tarp Covering Systems Manufacturing	Industrial	291915	2920904
Auto Accessories Manufacturing	Industrial	343004	2930108

Activity Name	License Type	Old Activity Code	New Activity Code
Transport Furniture Manufacturing	Industrial	361010	2930109
Auto Electrical Wires Manufacturing	Industrial	313005	2930110
Ships Building	Industrial	351101	3011101
Ship Parts Manufacturing	Industrial	351103	3011103
Boats Building	Industrial	351202	3012001
Wooden Ships & Boats Building	Industrial	351201	3012002
Airplanes Manufacturing	Industrial	359901	3030001
Aircrafts Parts & Accessories Manufacturing	Industrial		3030003
Satellites Manufacturing	Industrial		3030010
Aircraft Cabin Simulators Manufacturing	Industrial	353003	3030101
Military Vehicles Manufacturing	Industrial	341004	3040101
Motorcycles Manufacturing	Industrial	359100	3091001
Bicycles Manufacturing	Industrial	359200	3092001
Home Furniture Manufacturing	Industrial	361001	3100001
Kitchen Cabinets & Fixtures Manufacturing	Industrial	361002	3100002
School & Hospital Furniture Manufacturing	Industrial	361003	3100004
Auditoriums & Sports Venues Seats Manufacturing	Industrial	361016	3100006
Office Furniture Manufacturing	Industrial	361004	3100007
Shop Fixtures Manufacturing	Industrial	361005	3100008
Sponge Mattresses Manufacturing	Industrial	361006	3100009
Spring Mattresses Manufacturing	Industrial	361007	3100010
Gold & Precious Metal Products Manufacturing	Industrial	369101	3211001
Silverware & Jewellery Manufacturing	Industrial	369102	3211002
Precious Stones Cutting & Polishing	Industrial	369103	3211003
Precious Jewellery Manufacturing	Industrial	369104	3211004
Medals & Shields Manufacturing	Industrial	273204	3212001
3D Printing Manufacturing (Additive Manufacturing)	Industrial	369930	3290024
Metal Tanks & Barrels Repair	Professional	515993	3311001
Cargo Containers Repair & Maintenance	Professional	515984	3311008
Scaffolding & Formwork Repairing	Industrial	281121	3311009
Anti-Corrosion Services	Professional	515991	3319906
Ice Manufacturing	Industrial	154902	3530003
Metal Scrap Processing	Industrial	371001	3830101
Glass Waste Processing	Industrial	372002	3830901
Fabric & Textile Waste Recycling	Industrial	372004	3830903
Recycled Plastic Materials Manufacturing	Industrial	241302	3830907
Used Tyres Recycling	Industrial	372006	3830908
Non Metal Waste Collecting & Processing	Industrial	372005	3830909
Construction & Demolition Waste Recycling	Industrial	372008	3830910
Soil Analysis Services	Professional	742201	7120001
Chemical & Biological Laboratory	Professional	742202	7120002
Gold & Precious Metals Testing Laboratory	Professional	742204	7120011
Diamond & Precious Gemstones Testing Laboratory	Professional	742215	7120029

PART 3 - List of Light Industrial Activities (Category C)

Activity Name	License Type	Old Activity Code	New Activity Code
Oil & Natural Gas Well Reinforcement Services	Industrial	112003	910004
Meat Storing & Freezing	Industrial	151103	1010103
Fish & Seafood Freezing	Industrial	151202	1020002
Fruits Canning & Packaging	Industrial	151301	1030001
Vegetables, Legumes Canning & Packaging	Industrial	151302	1030002
Dry Fruit & Vegetables Packaging	Industrial	151307	1030005
Dates Preparing & Packaging	Industrial	151315	1030007
Fruit & Vegetables Freezing	Industrial	151305	1030008
Dates Drying & Packaging	Industrial	151306	1030101
Vegetable, Animal Oil & Fat Refilling	Industrial	151404	1040902
Grain Mills	Industrial	153101	1061001
Flour Mills	Industrial	153102	1061002
Grains Packaging	Industrial	153104	1061004
Rice Husking & Polishing	Industrial	153105	1061005
Sugar Packaging	Industrial	154203	1072003
Vegetables & Cheese Spring Rolls Manufacturing	Industrial	154107	1074005
Tea Blending & Packaging	Industrial	154903	1079004
Coffee Roasting & Packaging	Industrial	154919	1079005
Herbs Packaging	Industrial	154904	1079006
Nuts Roasting & Packaging	Industrial	151312	1079007
Salt Packaging	Industrial	142203	1079008
Spices Packaging	Industrial	154907	1079009
Rose Water Bottling	Industrial	154908	1079010
Juice, Ice Cream & Dry Mixes Processing	Industrial	154913	1079102
Salt Cubes Manufacturing	Industrial	242911	1079103
Honey & Syrups Refilling	Industrial	154918	1104903
Instant Coffee Preparation	Industrial	154925	1104904
Instant Tea Preparation	Industrial	154926	1104905
Sauces, Spreads & Condiments Preparation	Industrial	154927	1104906
Sewing Yarn Manufacturing	Industrial	171103	1311002
Lace & Crochet Manufacturing	Industrial	171104	1311005
Fabrics, Textiles & Readymade Garments Screen Printing	Industrial	222110	1313002
Bed Sheets & Household Linen Manufacturing	Industrial	172102	1392002
Towels Manufacturing	Industrial	172104	1392004
Auto Upholstery Manufacturing	Industrial	172105	1392005
Fabrics Textiles Embroidering	Industrial	172106	1392007
Pillows & Cushions Manufacturing	Industrial	172108	1392008
Flags Manufacturing	Industrial	172107	1392009
Marine Protection & Demarcation Products Manufacturing	Industrial	172110	1392015
Mats & Rugs Manufacturing	Industrial	172202	1393002
Ropes Manufacturing	Industrial	172302	1394001
Saddles & Animals, Bird Training Requisites Making	Industrial	369926	1512003
Sawmilling & Planning of Wood	Industrial	201000	1610008

Activity Name	License Type	Old Activity Code	New Activity Code
Carpentry	Professional	202204	1622007
Cloth Hangers Manufacturing	Industrial	369903	1629902
Corrugated Carton Boxes & Containers Manufacturing	Industrial	210201	1702002
Paper Boxes & Containers Manufacturing	Industrial	210202	1702003
Paper Bags Manufacturing	Industrial	210204	1702004
Files & Box Files Manufacturing	Industrial	210205	1702005
Core Paper Manufacturing	Industrial	210206	1702006
Paper Plates & Dishes Manufacturing	Industrial	210901	1709001
Notebooks & Writing Pads Manufacturing	Industrial	222106	1709004
Cards & Envelopes Manufacturing	Industrial	210902	1709006
Tissues & Napkins Manufacturing	Industrial	210903	1709008
Diapers Manufacturing	Industrial	210904	1709009
Sanitary Napkins Manufacturing	Industrial	210905	1709010
Paper Stationery Manufacturing	Industrial	210907	1709014
Self Adhesive Labels Manufacturing	Industrial	210906	1709017
Packing & Packaging Materials Manufacturing	Industrial	210203	1709019
Adhesive & Paper Slitting	Industrial	242209	1709101
Books Binding	Industrial	222201	1812001
Perfumes Manufacturing	Industrial	242403	2023008
Agar wood & Incense Manufacturing	Industrial	242406	2023009
Steel Fabrication & Welding Workshop	Professional	289918	2592005
Lathe Workshop	Industrial	289919	2592007
Blacksmith & Welding Works	Professional	289930	2592009
Cable Trays, Cross Arms Accessories Assembling	Industrial	289937	2599501
Electronic Chips & Semiconductors Manufacturing	Industrial	321002	2610003
Electronic Printed Circuit Boards Assembling	Industrial	321004	2610007
Electronic Precision Devices Manufacturing	Industrial	321005	2610009
Electronic Appliances Assembling	Industrial	321003	2610010
Scanners Manufacturing	Industrial	300004	2620003
Calculators Manufacturing	Industrial	300005	2620007
Computer Assembling	Industrial	300001	2620101
Telecommunications Equipment & Accessories Manufacturing	Industrial	322001	2630001
Antennas Manufacturing	Industrial	289915	2630003
Remote Control Systems Manufacturing	Industrial	319001	2630005
Telecommunications Equipment & Accessories Assembling	Industrial	322002	2630006
Telecom Optics Cables, Wires & Requisites Assembling	Industrial	313008	2630101
Electrical Measuring & Control Systems Manufacturing	Industrial	331301	2651001
Non Electrical Measuring & Control Systems Manufacturing	Industrial	331302	2651002
Detection Equipment Assembling	Industrial	331303	2651006
Radar Equipment Manufacturing	Industrial	331201	2651019
Watches & Clocks Manufacturing	Industrial	333000	2652001
Audio Cassettes Manufacturing	Industrial	252009	2680001

Activity Name	License Type	Old Activity Code	New Activity Code
Video Cassettes Manufacturing	Industrial	252010	2680002
Optical Media Discs Manufacturing	Industrial	252018	2680005
Power Generators & Transformers Assembly	Industrial	311004	2710007
Solar Panels Assembling	Industrial	311006	2710013
Power Control Switchgear & Distribution Panels Assembling	Industrial	312004	2710015
Fiber Optics Cables, Wires & Requisites Assembling	Industrial	313009	2731101
Electrical Cables, Wires & Requisites Assembling	Industrial	313010	2732101
Power Supply Wires Accessories Manufacturing	Industrial	313007	2733004
Electric Lamps Manufacturing	Industrial	315001	2740001
Chandeliers Manufacturing	Industrial	315006	2740003
Lighting Fitting & Fixtures Assembling	Industrial	315007	2740004
Lamp Base & Accessories Manufacturing	Industrial	315002	2740005
Pumps Assembling	Industrial	291203	2813002
Lifts Assembling	Industrial	291505	2816009
Printers Cartridges Assembly	Industrial	300003	2817001
Typewriter Manufacturing	Industrial	300002	2817003
Filters Manufacturing	Industrial	291904	2819102
Water Treatment Equipment Assembling	Industrial	291922	2819104
Air-Conditioning Units Assembling	Industrial	291917	2819203
Fire Fighting Equipment Assembling	Industrial	291903	2819905
Diving Equipment Assembling	Industrial	291918	2819907
Pipes & Hoses Assembling	Industrial	291919	2819915
Construction Equipment & Machinery Assembling	Industrial	291916	2824012
Packing & Packaging Machines Assembling	Industrial	291921	2829010
Marine Guide Equipment & Tools Assembling	Industrial	292903	2829013
Gas & Chemicals Production Systems Assembling	Industrial	292904	2829014
Industrial Robots Assembling	Industrial	292909	2829017
Motor Vehicles Assembly	Industrial	341001	2910001
Automobile Outfitting	Industrial	341002	2920905
Outfitting Vehicles for Safe Transport	Industrial	341003	2920906
Radiator Manufacturing	Industrial	343001	2930101
Exhausts Manufacturing	Industrial	343002	2930102
Brake Pads Manufacturing	Industrial	343005	2930106
Vehicle Speed Limiter Assembling	Industrial	343007	2930111
Motor vehicles spare parts Manufacturing	Industrial	343006	2930117
Off Road Karts Assembling	Industrial	359101	3091002
Musical Instruments Manufacturing	Industrial	369200	3220001
Sports Goods Manufacturing	Industrial	369300	3230002
Surfboards Manufacturing	Industrial	369301	3230003
Plastic Toys Manufacturing	Industrial	369401	3240001
Dolls Manufacturing	Industrial	369402	3240003
Optical Products Manufacturing	Industrial	332000	3250011
Contact Lenses Manufacturing	Industrial	332001	3250012
Pens & Writing Instruments Manufacturing	Industrial	369901	3290001
Stamps Manufacturing	Industrial	369902	3290003
Wig Making	Industrial	369928	3290004

Activity Name	License Type	Old Activity Code	New Activity Code
Brooms & Cleaning Articles Manufacturing	Industrial	369905	3290005
Umbrellas & Awnings Manufacturing	Industrial	369906	3290007
Mechanical Seals & Gaskets Manufacturing	Industrial	369907	3290008
Albums Manufacturing	Industrial	369909	3290009
Tailoring & Embroidery Requisites Manufacturing	Industrial	369913	3290012
Artificial Plants & Flowers Making	Industrial	369922	3290013
Grinding & Scraping Requisites Manufacturing	Industrial	369912	3290014
Amusement Centers Equipment Manufacturing	Industrial	369403	3290021
Beauty & Personal Care Requisites Manufacturing	Industrial	369904	3290023
Safety Harness Fabrication	Industrial	369929	3290101
Stationery Manufacturing	Industrial	369924	3290102
Scales, Dry Measures Repair & Maintenance	Professional	526004	3312006
Air-Condition & Refrigeration Equipment Maintenance & Repair	Professional	526003	3312007
Oil & Natural Gas Well Equipment Repair & Maintenance	Professional	112004	3312013
Ships & Boats Repair	Industrial	351203	3315001
Helicopters Repair & Maintenance	Industrial	353004	3315010
Ships & Boats Maintenance Services	Professional	351204	3315101
Light Duty Equipment & Engines Repair	Professional	515962	3319901
Heavy Duty Equipment & Machinery Repair & Maintenance	Professional	515966	3319902
Marine Equipment Repairing & Maintenance	Professional	515983	3319903
Dry Cleaning Services	Professional	930103	9601005
Publishing of Books & Other Publications Services	Professional	221100	5811001



Annex 2

Baseline Survey, Numerical Modeling and
Laboratory Analysis Requirements for Major
Industrial Activities (Category A)

Table 1: Baseline Survey, Numerical Modeling and Laboratory Analysis Requirements for Category A Industrial Activities

Notes: <ul style="list-style-type: none"> The need for modeling will depend on the size of manufacturing operations and the presence of sensitive receptors surrounding the facility. The facility must adhere to the baseline measurement requirements and the samples shall be analysed by a laboratory accredited by the Emirates International Accreditation Center (EIAC). 				
Activity Name	Air Quality Baseline and Air Dispersion Modeling	Odour Gases Baseline and Odour Modeling	Soil Analysis	Ground Water Analysis
Farming of cows		NH ₃ and H ₂ S		Table (2)
Farming of Poultry		NH ₃ and H ₂ S	pH, heavy metals, salinity, toxic substances, pesticides, and herbicides	
Egg Production		NH ₃ and H ₂ S	pH, heavy metals, salinity, toxics substances and pesticides, and herbicides	
Organic Waste & Garbage Treatment		NH ₃ and H ₂ S	pH, salinity and heavy metals	
Paper Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Fuel Production	NOx, SO ₂ , CO, PM10/PM2.5		pH, heavy metals, Hydrocarbons	
Petroleum Gas Liquefaction	NOx, SO ₂ , CO, PM10/PM2.5			
Asphalt & Paving Materials Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, heavy metals, salinity and Hydrocarbons	
Grease & Lubricants Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, heavy metals, salinity and Hydrocarbons	
Natural Gas Liquefaction	NOx, SO ₂ , CO, PM10/PM2.5			
Sulfur Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH and heavy metals	
Petrochemical Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH and heavy metals	
Gas Liquefaction & Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5			
Composed Industrial Chemicals Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Acid Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5			
Organic Fertilizer Manufacturing		NH ₃ and H ₂ S	pH, salinity and heavy metals	
Chemical Fertilizers Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5	Identification of odorous gases will be based on the manufacturing processes	pH, salinity and heavy metals	
Agricultural Pesticides Manufacturing			pH, heavy metals, salinity and toxics substances	
Paint Manufacturing			pH, salinity and heavy metals	
Anti Corrosion Materials Manufacturing			pH, salinity and heavy metals	
Insulation Materials Manufacturing				
Synthetic Resins Manufacturing		Identification of odorous gases will be based on the manufacturing processes		
Oilfields Chemicals Manufacturing			pH, heavy metals, salinity and hydrocarbons	
Rubber Products Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5	Identification of odorous gases will be based on the manufacturing processes		
Clinker Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5			
Cement Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Precast Building Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Ready Mixed Concrete Manufacturing			pH, salinity and heavy metals	
Iron and Steel Smelter	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	Table (2)
Aluminum Smelter	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Aluminum Extrusion			pH, salinity and heavy metals	
Batteries Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Dry batteries Manufacturing			pH, salinity and heavy metals	
Dry Docks Operations	NOx, SO ₂ , CO, PM10/PM2.5			
Production & Distribution of Gas	NOx, SO ₂ , CO, PM10/PM2.5			
Organic Fuel Production	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Landfill Waste Gas Recovery	NOx, SO ₂ , CO, PM10/PM2.5	NH ₃ and H ₂ S	pH, salinity and heavy metals	
Battery Recycling	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	
Recycling of Waste Electrical and Electronic Equipment			pH, salinity and heavy metals	
Lubricant Waste Recycling	NOx, SO ₂ , CO, PM10/PM2.5		pH, heavy metals and Hydrocarbons	Table (2)
Sewage Grease Treatment		NH ₃ and H ₂ S		
Solvents Waste Recycling				
Crude Fiber Glass Manufacturing	NOx, SO ₂ , CO, PM10/PM2.5		pH, salinity and heavy metals	

Table 2. Baseline Groundwater Quality Parameters

Note: The facility must adhere to the baseline measurement requirements and the samples shall be analysed by a laboratory accredited by the Emirates International Accreditation Center (EIAC)

S.No.	Parameter	Unit of Measurement
Physical parameters		
1	pH	
2	Temp	Degree Celsius
3	Color	
4	Turbidity	NTU
5	E Conductivity	microS/cm
6	TDS	mg/L
7	Total Hardness	mg/L as CaCO ₃
8	Residual chlorine	mg/L as Cl ₂
Inorganic parameters		
9	Sodium	mg/L
10	Potassium	mg/L
11	Calcium	mg/L
12	Magnesium	mg/L
13	Sulphate	mg/L
14	Nitrate	mg/L
15	Phosphate	mg/L
16	Total Nitrogen	mg/L
17	Chloride	mg/L
18	Aluminium	µg/L
19	Arsenic	µg/L
20	Cadmium	µg/L
21	Chromium	µg/L
22	Cobalt	µg/L
23	Copper	µg/L
24	Iron	µg/L
25	Lead	µg/L
26	Molybdenum	µg/L
27	Boron	µg/L
28	Barium	µg/L
29	Beryllium	µg/L
30	Manganese	µg/L
31	Zinc	µg/L
32	Mercury	µg/L
Miscellaneous parameters		
33	Oil & Grease-Free oil	mg/L
34	Pesticides-Chlorinated	mg/L
35	Phenols	mg/L
36	Benzene	mg/L
37	Hydrogen sulphide	mg/L
38	Total Cyanide	mg/L
39	Dissolved Oxygen	mg/L
40	Biochemical Oxygen Demand	mg/L
41	1, 2 dichloroethane	mg/L
42	Dichloromethane	mg/L
Microbial parameters		
43	E. Coli	CFU/100 ml
44	Total Coliform	CFU/100 ml
45	Total Bacterial Count	CFU/100 ml @37 degree Celcius

Annex 3

Environmental Impact Assessment Summary
Report for Medium Industrial Activities
(Category B)

Organization Unit:	Environmental Sustainability Department	الوحدة التنظيمية :
Work Instructions title:	EIA Summary Report for Medium Industrial Activities (Category B)	عنوان الوثيقة :
Doc Ref.	DM-ESD-FO01-EIAB	رقم الوثيقة :

Flow Diagram to Include (Raw Materials, Process Equipment and Machines)

Note: Additional sheets can be used if necessary.

1 List of Raw Materials
(including refrigerants and fuel, if any)

1		4	
2		5	
3		6	

2 Production and Manufacturing Process
(Process Equipment and Machines)

1		4	
2		5	
3		6	

3 Output of Process
(Final products)

1		4	
2		5	
3		6	

Emission and/or Waste Sources

Check the following boxes if the emission and/or waste sources are 'applicable / not applicable' in the facility.

1. Spray paint booth (dry type)	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
2. Spray paint booth (wet type)	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
3. Blasting machine/ booth	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
4. Diesel fuel based boiler	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
5. Diesel fuel based oven	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
6. Metal and / or wood working machines	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
7. Metal coating Line	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
8. Trade wastewater	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable

Provided Control Measures for (emission sources and/or wastes generated)

Check 'Yes or No' if the control measures are provided.

1. Spray paint booth (dry type) provided with filter	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Spray paint booth (wet type) provided with water curtain and filter	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Blasting machine/booth provided with dust collector system	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Diesel fuel based boiler provided with stack/chimney	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Diesel fuel based oven provided with stack/chimney	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. Metal and/ or wood working machine provided with dust collector	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Metal coating line provided with fume scrubber	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8. Wastewater Treatment or Recycling Plant.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Note: Depending on the nature and size of the manufacturing processes, the customer may be requested to provide additional information and/or attach other documents or submit an Environmental Impact Assessment Report..



Organization Unit:	Environmental Sustainability Department	الوحدة التنظيمية :
Work Instructions title:	EIA Summary Report for Medium Industrial Activities (Category B)	عنوان الوثيقة :
Doc Ref.	DM-ESD-FO01-EIAB	رقم الوثيقة :

Company Declaration:

I hereby declare that all the details, information and documents submitted for the purpose of obtaining the Environmental Clearance are correct and I undertake to comply with all the conditions and requirements listed below.

Company name and stamp / Full Name and Signature of the Company Owner

Date

General Conditions:

1. The company should only undertake the specified activities in the same Location / Plot number mentioned in the Environmental Clearance (EC). Prior approval shall be secured from Air Environment Sustainability and Environmental Assessment Section for any Expansion, or alteration of company activities & facilities and/or modification of the license (name, location, activities).
2. The company should keep a copy of the (EC) at the premises at all time; allow access and assist representatives of Dubai Municipality-Environmental Sustainability Department (DM-ESD) in carrying out inspections, incident investigations, taking of pictures; and in obtaining relevant information on sources of emission or waste, at anytime.
3. The (EC) is not a substitute to other regulatory permits, and its issuance does not exempt the company from securing other government agencies and/or departments approvals and from enforcing their rules and regulations.
4. The (EC) shall be renewed at least thirty (30) days prior to its expiry date. The renewal of the (EC) is subject to compliance to the conditions stipulated in the previously issued (EC).

Environmental Conditions:

5. Any environment-related incidents and complaints shall be reported immediately to the Environmental Control Section (ECS) through - ECS@dm.gov.ae, within twenty-four (24) hours. The incident report shall describe the likely cause, the time of occurrence, and the conditions under which an incident occurred, the extent of impact, and the remedial actions undertaken.
6. Adequate air emission control and mitigation measures shall be implemented to avoid or minimize air and/or odour pollutants and noise associated with the company activities. All discharges to the air environment shall comply with the allowable limits prescribed in the "Federal Law No. 24 of 1999 for the protection and Development of the Environment", its Implementing Rules and Regulations and its Amendments or as adopted by DM and mentioned in the (EC) conditions.
7. Process wastewater generated from production and plant or machine/equipment maintenance, shall be separately collected for storage and/or treatment; with a quality to comply with the trade waste disposal standards and requirements, in accordance with the DM- Waste Operations Department requirement.
8. Any type of hazardous waste generated from the company activities (liquid, solid, gaseous); shall be segregated, collected, transported, and disposed of properly in accordance with the DM- Waste Operations Department requirement.
9. Storage of dangerous goods in company premises, shall have necessary permits from Dubai Civil Defense (DCD).
10. The consumption of ozone-depleting substances (ODS), such as in (refrigeration, air conditioning, and foam applications) shall be in accordance with The Montreal Protocol on Substances that Deplete the Ozone Layer. The use of phased-out (ODS) (e.g. CFCs, halons, carbon tetrachloride, methyl chloroform, methyl bromide, hydrobromofluorocarbons) is strictly prohibited. Facilities shall replace (ODS) with zero-ozone depletion potential or low-global warming potential substitutes, and must recover, reclaim or dispose (ODS) using best practices.

Annex 4

Environmental Impact Assessment Checklist for Light Industrial Activities (Category C)

Organization Unit:	Environmental Sustainability Department	الوحدة التنظيمية :
Work Instructions title:	EIA Checklist for Light Industrial Activities (Category C)	عنوان الوثيقة :
Doc Ref.	DM-ESD-FO01-EIAC	رقم الوثيقة :

Activities Description

1.
2.
3.
4.

Emission and/or Waste Sources

Check the following boxes if the emission and/or waste sources are 'applicable / not applicable' in the facility.

1. Spray paint booth (dry type)	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
2. Spray paint booth (wet type)	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
3. Blasting machine/ booth	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
4. Diesel fuel based boiler	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
5. Diesel fuel based oven	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
6. Metal and / or wood working machines	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
7. Metal coating Line	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable
8. Trade wastewater	<input type="checkbox"/> Applicable	<input type="checkbox"/> Not Applicable

Provided Control Measures for (emission sources and/or wastes generated)

Check 'Yes or No' if the control measures are provided.

1. Spray paint booth (dry type) provided with filter	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2. Spray paint booth (wet type) provided with water curtain and filter	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3. Blasting machine/booth provided with dust collector system	<input type="checkbox"/> Yes	<input type="checkbox"/> No
4. Diesel fuel based boiler provided with stack/chimney	<input type="checkbox"/> Yes	<input type="checkbox"/> No
5. Diesel fuel based oven provided with stack/chimney	<input type="checkbox"/> Yes	<input type="checkbox"/> No
6. Metal and/ or wood working machine provided with dust collector	<input type="checkbox"/> Yes	<input type="checkbox"/> No
7. Metal coating line provided with fume scrubber	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8. Wastewater Treatment or Recycling Plant.	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Note: Depending on the nature and size of the manufacturing processes, the customer may be requested to provide additional information and/or attach other documents or submit an Environmental Impact Assessment Summary Report.



بلدية دبي
Dubai Municipality

Organization Unit:	Environmental Sustainability Department	الوحدة التنظيمية :
Work Instructions title:	EIA Checklist for Light Industrial Activities (Category C)	عنوان الوثيقة :
Doc Ref.	DM-ESD-FO01-EIAC	رقم الوثيقة :

Company Declaration:

I hereby declare that all the details, information and documents submitted for the purpose of obtaining the Environmental Clearance are correct and I undertake to comply with all the conditions and requirements listed below.

Company name and stamp / Full Name and Signature of the Company Owner

Date

General Conditions:

1. The company should only undertake the specified activities in the same Location / Plot number mentioned in the Environmental Clearance (EC). Prior approval shall be secured from Air Environment Sustainability and Environmental Assessment Section for any Expansion, or alteration of company activities & facilities and/or modification of the license (name, location, activities).
2. The company should keep a copy of the (EC) at the premises at all time; allow access and assist representatives of Dubai Municipality-Environmental Sustainability Department (DM-ESD) in carrying out inspections, incident investigations, taking of pictures; and in obtaining relevant information on sources of emission or waste, at anytime.
3. The (EC) is not a substitute to other regulatory permits, and its issuance does not exempt the company from securing other government agencies and/or departments approvals and from enforcing their rules and regulations.
4. The (EC) shall be renewed at least thirty (30) days prior to its expiry date. The renewal of the (EC) is subject to compliance to the conditions stipulated in the previously issued (EC).

Environmental Conditions:

5. Any environment-related incidents and complaints shall be reported immediately to the Environmental Control Section (ECS) through - ECS@dm.gov.ae, within twenty-four (24) hours. The incident report shall describe the likely cause, the time of occurrence, and the conditions under which an incident occurred, the extent of impact, and the remedial actions undertaken.
6. Adequate air emission control and mitigation measures shall be implemented to avoid or minimize air and/or odour pollutants and noise associated with the company activities. All discharges to the air environment shall comply with the allowable limits prescribed in the "Federal Law No. 24 of 1999 for the protection and Development of the Environment", its Implementing Rules and Regulations and its Amendments or as adopted by DM and mentioned in the (EC) conditions.
7. Process wastewater generated from production and plant or machine/equipment maintenance, shall be separately collected for storage and/or treatment; with a quality to comply with the trade waste disposal standards and requirements, in accordance with the DM-Waste Operations Department requirement.
8. Any type of hazardous waste generated from the company activities (liquid, solid, gaseous); shall be segregated, collected, transported, and disposed of properly in accordance with the DM- Waste Operations Department requirement.
9. Storage of dangerous goods in company premises, shall have necessary permits from Dubai Civil Defense (DCD).
10. The consumption of ozone-depleting substances (ODS), such as in (refrigeration, air conditioning, and foam applications) shall be in accordance with The Montreal Protocol on Substances that Deplete the Ozone Layer. The use of phased-out (ODS) (e.g. CFCs, halons, carbon tetrachloride, methyl chloroform, methyl bromide, hydrobromofluorocarbons) is strictly prohibited. Facilities shall replace (ODS) with zero-ozone depletion potential or low-global warming potential substitutes, and must recover, reclaim or dispose (ODS) using best practices.

