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ENVIRONMENTAL PROCEDURES

TECHNICAL GUIDELINE DOCUMENT ON ENVIRONMENTAL & SOCIAL ASSESSMENT REPORTING

NEOM-NEV-TGD-601, Rev 01.00, June 2021

Document history

Revision Code	Description of changes	Purpose of issue	Date
Rev A	First Draft	Issued for Review	21.08.2020
Rev 01.00	First Issue	Issued for Implementation	17.06.2021

Document approval

	Prepared by	Reviewed by	Approved by
Name	Dr. Barry Shepherd	Peter Caron	Damien Trinder
Job Title	Manager Assessment and Monitoring	Manager Assessment and Approvals	(Acting) Chief Environmental Officer

This document was prepared by NEOM Environment Department for the sole use of NEOM

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1. Purpose

The NEOM Environmental Vision has set ambitious goals for Net Positive Outcomes for the Climate, Biodiversity and Environmental Quality. The Vision also sets out to ensure sustainable use of resources, the establishment of a truly circular economy and the engenderment of the most environmentally conscious citizenry on the planet. In combination, these goals aim to not just maintain the current environmental and social capital of NEOM, but to also build capacity into the future. The idea of building environmental and social capital through development is a new and emerging concept worldwide, and is often referred to as Regenerative Development.

NEOM has developed the NEOM Regenerative Development Management System (RDMS), to guide NEOM **Proponent**s to plan, design, assess, construct and operate developments in NEOM to achieve economic growth and improve NEOM's environmental and social capital.

The purpose of the Guidance Document (the Guide) is to assist Environmental Consultants in preparing Environmental and Social assessment documents required to obtain approval of a proposed development from the NEOM Environment Department.

The Guide is aligned with the following NEOM system documents:

- NEOM-NEV-PRC-016: *Procedure for Regenerative Developments*
- NEOM-NEV-EMR-402: *Employer Requirements for Regenerative Developments in Environmental Services*.
- NEOM-NEV-PRC-602: *Procedure for Environmental and Social Risk and Opportunities Assessment*

This Guide is owned by the Director of Regenerative Development. As part of the NEOM RDMS, this Guide will be reviewed at least every 12 months.

2. Scope

The Guide is intended for use by NEOM **Proponent**s, Delivery Teams (Urban Development, Projects, Operations), and the Procurement Department in relation to all Development projects across NEOM. Implementation of the Guide requires a collaborative approach between all parties and with the NEOM Environment Department (**NEV**). All users of this Guide are encouraged to engage **NEV** at the earliest opportunity to enable smooth and efficient implementation.

The Guide is intended to be applied to the preparation of environmental and social assessment reports for NEOM Development Categories IV, III and II, which shall be prepared using the NEOM SEA/ESIA Template as attached at Appendix A. NEOM Development Categories are explained in NEOM-NEV-PRC-016. Applicability of this guide is described as follows:

- **Category IV** – Require a strategic approach and should be primarily desk-based assessments. Due to limitations in data availability and / or design finalization, assessments should take the precautionary approach and clearly state any uncertainties attached with the document's conclusions.
- **Category III** – require a comprehensive (ESIA) approach based on desktop assessments, detailed baseline survey data and confirmed detailed masterplans and developed designs. The results should be accompanied with relevant supporting study reports which provide a high-level of confidence in the assessment and provide clear guidance to future detailed design and management requirements during construction and operations.

- **Category II** – require a very targeted assessment or a broader review of a related SEA (Category IV). Information presented here should contain brief summaries of existing information with specific reference to standard issues such as emissions, discharges, wastes, embodied carbon, and operational activities.
- **Category I** – Not Applicable, use Preliminary Environmental Review Form (NEOM-NEV-FRM-603).

3. Definitions and Abbreviations

Table 1: Abbreviations

Abbreviation	Explanation
BoD	Basis of Design
CESMP	Construction Environment & Social Management Plan
ENVID	Environmental [& Social] Hazard Identification
ESIA	Environmental & Social Impact Assessment
GERRI	General Environmental Regulations (GER) and the Rules for Implementation (Presidency of Meteorology and Environment, 2001)
GRC	Gate Review & Approval Committee
IAP	Integrated Assessment Process
IDP	Integrated Development Plan
IFC	International Finance Corporation
NEV	NEOM Environment Department
O&M	Operation & Maintenance
PER	Preliminary Environmental Review
POE	Post Occupancy Evaluation
SEA	Strategic Environmental [& Social] Assessment
SITES	Sustainable Sites Initiative
UXO	Unexploded Ordnance

Table 2: Definitions

Term	Definition
Construction Team	NEOM Directors, Project Managers, Construction managers, Construction Contractors and Suppliers responsible for mobilization, preparatory works, construction, commissioning and post-construction site rectification of the Development.
Design Team	Project Designers (including architects, interior designers and landscape designers), Engineering Consultants, **Environmental Consultant**s, Sustainability Consultants, Specialist Consultants, and Sub consultants responsible for the Design Deliverables during Stage 3 for the Development.
Districts or Neighborhoods	Large scale urban development irrespective of their land use, consisting of a cluster of buildings and their associated infrastructure and public realm networks.
Environmental Consultant	Specialized **Environmental Consultant** selected from NEOM's Environmental Services Framework and engaged by the **Proponent** to independently review and advise the development process and develop and implement environmental and social risk management documentation and programs through to the end of Construction
Iconic (Campus) Assets	Large scale complex development projects which are critical to broad social or community needs. Iconic Assets may include masterplans for stadia, hospitals, universities, airports and train stations.
Infrastructure and Public Realm	Infrastructure and public realm networks that may serve and be part of a master plan development or connecting multiple developments. Infrastructure projects may include infrastructure networks, power plants, desalination plants and other infrastructure facilities. Public Realm projects may include large scale landscaping and hardscaping projects (e.g. parks, public squares, pathways, and roadside landscaping)
Operations Team	NEOM Directors, Project Managers, Facility Operations managers, Facility Operations Contractors and Suppliers responsible for the start-up, operations, maintenance, ongoing commissioning, shut-down and upgrade of the Development.
Planning Team	Project master-planners, Project Designers (including architects, urban designers and landscape designers), Engineering Consultants, **Environmental Consultant**s, Sustainability Consultants, Specialist Consultants, and Sub consultants responsible for the Planning Deliverables during Stages 1 & 2 of the Development
Proponent	The Proponent is a NEOM entity or a Developer designated by NEOM to accept custody for the planning, designing, constructing or managing and operating a particular asset or a group of assets.
Regenerative Development	A development that regenerates its natural, physical, social and economic capitals to a state beyond sustainability. The terminology implies a state of net positive impact at present and requires a holistic approach to nature, implementing systems thinking and true cost accounting i.e. ecosystems services accounting.

Term	Definition
Regional Infrastructure Networks	Networks of standard and non-standard assets that serves the region such as regional storage facilities and tanks, regional power stations, material supply depots (e.g. quarries or waste transfer stations) connected by extensive linear infrastructure elements such as regional power transmission, water supply pipelines and roads.
Region-wide Programs	Region wide programs contain a collection of individual sites or clusters dedicated to the implementation or activation of economic sector strategies such as sports, strategic events and nature-based tourism, typically involving the installation of a combination of temporary buildings or non-standard assets and the presence of large numbers of visitors, guest or spectators
Standard Assets	All building types otherwise not considered Iconic; including but not limited to residential, commercial, hospitality, retail, healthcare, civic, and warehouse buildings

4. Related NEOM System Documents

The requirements contained in the following documents apply to the extent specified in this Guide.

Engineering Guides

Document Code	Document Name
NEOM-EN-PRC-001	Guide for Geotechnical Investigation
NEOM-EN-PRC-002	Guide for Topographic Survey
NEOM-EN-PRC-004	Initial Asset Brief Guide
NEOM-EN-PRC-005	Guide for Design Stages Deliverables
NEOM-EN-PRC-007	Guide for Value Engineering
NEOM-EN-PRC-008	Guide for Document Numbering and Revision
NEOM-EN-PRC-009	Guide for BIM & GIS
NEOM-EN-PRC-010	Guide for Drawing and Drafting
NEOM-EN-PRC-011	Guide for Site Specific Seismic Hazard Study
NEOM-EN-PRC-012	Guide for Hydrological Study
NEOM-EN-PRC-013	Guide for Traffic Study
NEOM-EN-PRC-017	Guide for Innovative Ideas
NEOM-EN-PRC-021	Guide for Gate Review and Approval
NEOM-EN-PRC-022	Guide for Handing Over

Cost Estimation Manual and Guides

Document Code	Document Name
NEOM-CE-MNL-001	Cost Estimation Policies and Guidelines
NEOM-CE-PRC-001	Cost Estimating Guide

Program, Planning & Control Manual and Guides

Document Code	Document Name
NEOM-EN-MNL-001	Program, Planning and Control Manual
NEOM-EN-PRC-023	Program Management Guide
NEOM-EN-PRC-024	Design and Procurement Schedule Management Guide
NEOM-EN-PRC-025	Construction Planning Management Guide
NEOM-EN-PRC-026	Key Performance Indicator Guide
NEOM-EN-PRC-027	Earned Value Management Guide
NEOM-EN-PRC-028	Risk Management Guide
NEOM-EN-PRC-029	NEOM Plan of Work

NEOM Regenerative Development Management System Documents

Document Code	Document Name
NEOM-NEV-GGD-401	General Guideline on Environmental Services for Regenerative Development
NEOM-NEV-EMR-401	Employer Requirements for Regenerative Development in Planning and Design
NEOM-NEV-FRM-401	Regenerative Development Initiation Form
NEOM-NEV-PRC-501	Interim Sustainability Requirements Procedure for Built Environment
NEOM-NEV-PRC-601	Environmental and Social Assessment and Approvals Procedures
NEOM-NEV-TGD-601	Environmental & Social Impact Assessment (ESIA) Report Template and Guidance
NEOM-NEV-TGD-602	Environmental and Social Management Plan (ESMP) Template and Guidelines
NEOM-NEV-TGD-703	Environmental Management System Template and Guidelines
NEOM-NEV-FRM-603	Preliminary Environmental Review Form
NEOM-NEV-TGD-702	Environmental and Social Codes of Practice for Construction
NEOM-NEV-PRC-016	Procedure for Regenerative Development
NEOM-NEV-PRC-701	Site Handover and Acceptance Procedure
NEOM-NEV-PRC-702	Environmental Management of Change Procedure
NEOM-NEV-PRC-703	Archaeology and Heritage Management Procedure
NEOM-NEV-TGD-701	Environmental & Social Compliance Assurance Standard
NEOM-NEV-PRC-704	Incident Identification, Investigation and Reporting Procedure
NEOM-NEV-PRC-705	Contamination Management Procedure
NEOM-NEV-PRC-706	Waste Management Procedure
NEOM-NEV-GGD-801	Environmental & Social Code of Conduct
NEOM-NEV-TRP-801	Environmental & Social Training Plan
NEOM-NEV-PRC-801	Environmental & Social Reporting Procedure

5. Guide

The Guide sets out information relating to sections in the Report Template (Appendix A), as follows:

1. Executive Summary
2. Introduction
3. Policy & Legal Framework
4. Site Selection & Analysis of Alternatives
5. Proposed Development Site
6. Existing Environmental & Social Values
7. Proposed Development Description
8. Risks & Opportunities Assessment
9. Cumulative Impacts & Net Benefits
10. Key Findings and Conclusions
11. Appendices

5.1. Executive Summary

The executive summary is prepared based on the material in the draft ESIA, and should not introduce ideas, information or conclusions that are not otherwise included. It is capable of being read on its own, without reliance on detail elsewhere.

The executive summary is written in a simple non-technical language, and made effective with the help of maps, tables, charts and figures as far as possible. It follows the structure of the draft ESIA where practical, except for the risk assessment methodology section that is omitted. The executive summary does not contain references or cross-references to the draft ESIA or its appendices.

The executive summary provides sufficient detail to purvey an overall understanding of what is being proposed, how the project has been designed to avoid impacts, and key mitigation measures proposed. It should highlight the key findings of the draft ESIA, including main environmental and social risks and residual impacts, and how the proposed project meets with relevant requirements.

The executive summary concludes by an overall conclusion on the environmental viability of the project, and on the project's contribution to meeting NEOM's environmental goals, aspirations and commitments.

5.2. Introduction

Note – This report provides the overarching framework and guidance notes with respect to what the ESIA to contain and evaluate. The ESIA Report is the technical document that is submitted in support of a proposed development and contains the necessary information as outlined within this document in order for decision makers to evaluate all related project information, risks and appropriate mitigation measures to ensure that an informed decision to either approve or reject the proposed project can be reached.

The information contained in the ESIA Report must align with the preceding scoping process that identifies the issues that are likely to be of most importance during the assessment (See NEOM-NEV-PRC-601 for scoping requirements).

5.2.1. Development Overview

For this section the author is to provide a brief overview of the development including the following

- High level description of the strategic purpose of the development including its position in the context of the NEOM Integrated Strategy and Saudi Vision 2030 Strategy.

- Key design elements included major infrastructure, facilities, and public realm
- Briefly note the planning horizon (timeframe) operational lifespan and execution schedule for design phases, construction and commissioning

Include a high level location figure illustrating the development footprint, the surrounding environmental features and existing infrastructure/communities and the locality within NEOM.

5.2.2. Assessment History

Provide brief synopsis of previous assessment and permitting including but not limited to:

- Land Use Permits
- Previous Assessments
- Current or Previous Environmental Accords

5.2.3. Purpose

This section shall be used to describe the purpose of this document (SEA, ESIA etc.) and how it will be used for submission in an environmental and social impact assessment process. In particular, it needs to describe how this document fits into the NEOM Procedure for Regenerative Development (NEOM-NEV-PRC-016). The receiving NEOM department will be named.

This section will also define additional environmental and social assessment, permitting and approvals processes that associated facilities will require prior to construction or operations e.g. Categories IV, III, II or I Developments or emissions permits etc. Associated facilities are facilities that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.

5.3. Policy & Legal Framework

This section in the Template should identify all polices, laws and regulations relevant to the Development. Information should be presented in text and table format under each of the headings. Specific guidance / context for each of the areas is provided below for further guidance.

5.3.1. Kingdom of Saudi Arabia Regulatory Framework

The concept of environmental protection is enshrined in Saudi National Policy and Legislation. Article 32 of the Constitution states:

"*The State shall endeavor to preserve, protect and improve the environment and prevent its pollution*."

Furthermore, the principles of Islam which include consideration of environmental protection are enshrined within Saudi legislation and its constitution.

The highest governance authority within the Kingdom of Saudi Arabia is The Ministerial Committee on Environment.

There is a wide range of Saudi ministries of agents with responsibilities for environmental management of the Kingdom's resources. These include the Ministry of Environment Water and Agriculture, a relatively newly established Ministry which is active in developing the Kingdom's strategies on sustainability and recently published its *National Environmental Strategy* (Saudi Ministry of Water and Agriculture, 2017).

The General Authority of Meteorology and Environmental Protection (GAMEP) is the Competent Authority for Environmental issues, as defined in the General Environmental Regulations (GERRI), 2001. The Competent Authority may designate Licensed Authorities to be responsible for project approvals and other elements of environmental protection. A number of other government entities therefore also have some involvement in the environmental approvals process within the kingdom.

Two specialised agencies are relevant to the current project process, these being the Saudi Wildlife Authority (SWA) and the Saudi Commission for Tourism and Heritage (SCTH). The SWA are focused on the development and management of protected areas. While the SCTH are responsible for the protection of the Kingdom's archaeological and heritage resource. The SCTH has an absolute right to conduct archaeological investigations and determine best approaches for protection of resources within project developments.

The General Authority for Civil Aviation (GACA) is the highest authority overseeing civil aviation in Saudi Arabia, overseeing the economic and safety regulation, air navigation services and the operation of Saudi Arabia's international, regional and domestic airports. GACA's mission is to develop the air transport industry in accordance with the latest international standards, strengthen the position of the Kingdom as a globally influential player in civil aviation, achieve financial growth and sustainability, and enforce the relevant rules, regulations and procedures to ensure air transport safety and security.

The main piece of legislation relating to the environment is the General Environmental Regulations (GERRI) and the Rules for Implementation (Presidency of Meteorology and Environment, 2001).1

1 Since 2001 the name of the national environmental regulator has been changed from Presidency of Meteorology and Environment to General Authority of Meteorology and Environmental Protection (GAMEP)

The environmental regulations as stated in the GERRI of 2001 comprise the following:

- Articles 1-18 describes the roles and responsibilities of PME and the licensing agencies, requirements for new and existing facilities, requirements for compliance with standards and protection of the environment and fines and penalties
- Environmental Protection Standards namely for Ambient Air Quality, Point Source Emissions and Wastewater Pre-Treatment and Direct Discharge Standards and Receiving Water Guidelines (Annex 1 of the GERRI)
- Basis and Procedures for Environmental Evaluation of Developmental and Industrial Projects (Annex 2 of the GERRI)
- Manual of Environmental Rehabilitation Procedures details the various environmental activities (services) that require certification from PME (Annex 3 of the GERRI)
- Rules and Procedures for Hazardous Waste Management (Annex 4 of the GERRI)
- National Contingency Plan for Combating Marine Pollution by Oil and Other Harmful Substances (Annex 5 of the GERRI)
- Types of Contraventions and Nature of Fines (Annex 6 of the GERRI).

This legislation forms the basis of environmental management and controls within the country. The environmental standards were updated by GAMEP in 2012-2014 and are discussed in Section 5.3.1.1.

Other relevant legislation includes the Act on Hunting of Wild Birds and Animals. This is a narrow piece of legislation which provides protection and sets out hunting seasons for a small group of species, including typical hunt prey such as gazelle and houbara bustard. This is no comprehensive protection law for wildlife within the Kingdom.

National requirements for Environmental Impact Assessment (EIA) are set out in the GERRI, 2001. Article 5 of the GERRI states:

"Licensing agencies must ascertain that the environmental assessment studies for projects which may cause negative impacts on the environment are done at the project feasibility stage, the agency in charge of implementation of the project shall be responsible for conducting the environmental assessment studies in accordance with the environmental rules and standards determined by the competent agency in the rules for implementation."

NEOM has committed to meeting International Finance Corporation (IFC) Environmental and Social Sustainability Performance Standards. While, there is no explicit national legal requirement under KSA law for undertaking social impact assessment of development projects. IFC Performance Standards include extensive requirements relating to potential social risks. This ESIA therefore address relevant social as well as environmental risks to of the Development to meet IFC requirements.

5.3.1.1. Environmental Standards

In 2012-2014 GAMEP published a series of updated Environmental Standards in support of the aims of the GERRI. These are:

- Material Recovery and Recycling of Waste
- Mobile Source Emissions
- Noise Standards
- Point Source Emissions
- Prevention of Major Accidents
- Storage and Material Reclamation Facilities - Design and Operation
- Thermal Treatment and Incineration – Design and Operation
- Waste Acceptance Criteria
- Waste Classification
- Drinking Water Quality
- Biological Treatment – Design and Operation
- Waste Regulatory Control and Compliance
- Waste Handling and Storage
- Waste Training and Assessment of Technical Competence of Operators
- Waste Transportation
- Best Practicable Environmental Option for Waste Disposal
- Industrial & Municipal Wastewater Discharges
- Ambient Air Quality
- Ambient Water Quality

As a basic minimum these standards will apply to the NEOM Project during its construction and operational phase. The sensitivity of the site and the geographically wide-ranging activities and compressed timescales for development suggest that additional limits on certain aspects of the environment and discharge values may be required.

In the absence of any national standards for environmental parameters, this ESIA will utilise appropriate international standards such as World Bank Environmental Health and Safety EHS) Guidelines, General EHS Guidelines (World Bank Group, 2007) (which are referenced by IFC Performance Standards), USA Federal Standards, European Union Standards and other suitable standards.

5.3.2. International Treaties & Conventions

Saudi Arabia is a member of a key regional convention relating to the protection of the Red Sea and its biodiversity. The Program for the Environment of the Red Sea and Gulf of Aden (PERSGA) was commenced in 1974. The intent to protect the marine environment in these areas was formalised through the development of The Regional Convention for the Conservation of the Red Sea and Gulf of Aden

Environment, generally referred to as the Jeddah Convention. The convention is aimed at protecting the Red Sea, Gulf of Aden and Gulf of Aqaba.

The convention was signed in 1982 and has subsequently developed a number of protocols for the protection of the marine waters within these areas. This includes the Protocol Concerning the Conservation of Biological Diversity and the Establishment of Network of Protected Areas in the Red Sea and Gulf of Aden which was signed in 2005 (PERSGA, 2004).

Parties to the Jeddah Convention, in addition to Saudi Arabia are Djibouti, Egypt, Jordan, Somalia, Sudan and Yemen. The convention is legally binding on parties and establishes a framework for protection and procedures within which parties are required to develop their own legislation, protected areas etc. to ensure that the intent of the Jeddah Convention is met.

The Biodiversity Protocol includes specific provisions for the protection of species and biomes, and specifically mentions sea, grass, corals and mangroves as requiring protection from harm both from marine based developments and activities and land-based discharges into marine waters.

The Kingdom of Saudi Arabia is a signatory to a wide range of international agreements related to environmental and social aspects. These include the International Convention for the Prevention of Pollution of the Sea by Oil of 1954, the Kyoto Protocol, and the Paris Agreement of the United Nations Framework Convention on Climate Change. In addition, as far as construction activities may be concerned, Saudi Arabia is a member of the International Labor Organization (ILO) and has obligations to meet its requirements.

The following agreements and conventions are also relevant as there are provisions for the protection of the environment:

1. Agreement for the Establishment for Arab Centre for the Studies of Dry and Barren Land [03/09/1968]
    - The Centre was established to conduct regional studies on barren areas in Arab countries, including e.g. studies of soils, studies on the degree of soil erosion and studies on the geological and geomorphological aspects of the different areas.
2. Convention for the Protection of the World Cultural and Natural Heritage [23/11/1972]
    - Established to protect and enhance cultural and natural heritage, whilst there has been a focus on UNESCO designated sites the convention requires member states to protect all relevant resources and specifically states that because a resource is not listed it should not be implied that the resource has no value.
3. Convention on International Trade in Endangered Species of Wild Fauna and Flora and Subsequent Amendments [03/03/1973]
    - Established to identify species at risk and control trade in endangered species
4. Convention on the Conservation of Migratory Species (CCMS) of Wild Animals and all amendments including MOU on Turtles [23/06/1979]
    - Established to coordinate conservation measures for migratory species. This cover a wide range of species, including birds, marine mammals, sea turtles and bats. Requires member states to preserve and protect species and habitats which occur regularly in their area. Through linkage with the Convention on Biological Diversity, Saudi Arabia is also required to provide protection to range species of bats under the Eurobat protocol of the CCMS.
5. International Plant Protection Convention (1979 Revised Text) [28/11/1979]
    - A convention established to protect the genetic resources of native plant species for agricultural and biological conservation purposes.

5.3.3. UN Sustainable Development Goals

As a key element of the Kingdom of Saudi Arabia's Vision 2030, and in line with the Kingdom's commitment to the United Nations Sustainable Development Goals, NEOM has undertaken an analysis of its integrated strategy and identified that 17 of the SDGs are addressed in some form by the NEOM Development and are built into NEOM's Regenerative Development Management System (RDMS)..

Neom will abide by the 17 SGD as defined by the UN, which are the following:

- SGD 1 – No Poverty
- SGD 2 – Zero Hunger
- SDG 3 – Good Health and Well-being
- SGD 4 – Quality Education
- SDG 5 – Gender Equality
- SDG 6 – Clean Water and Sanitation
- SDG 7 - Affordable and Clean Energy
- SDG 8 – Decent Work and Economic Growth
- SDG 9 – Industry, Innovation and Infrastructure
- SDG 10 – Reducing Inequality
- SDG 11 – Sustainable Cities and Communities
- SDG 12 – Responsible Consumption and Production
- SDG 13 – Climate Action
- SDG 14 – Life Below Water
- SDG 15 – Life on Land
- SDG 16 – Peace, Justice and Strong Institutions
- SDG 17 – Partnerships for the Goals.

5.3.4. IFC Performance Standards

There are eight (8) IFC Performance Standards which cover a range of sustainable development performance metrics, of which seven (7) are applicable to development activities within NEOM:

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Performance Standard 2: Labor and Working Conditions
- Performance Standard 3: Resource Efficiency and Pollution Prevention
- Performance Standard 4: Community Health, Safety, and Security
- Performance Standard 5: Land Acquisition and Involuntary Resettlement – which is being assessed in its entirety in a stand-alone assessment for the NEOM region
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Performance Standard 8: Cultural Heritage

Performance Standard 7: Indigenous Peoples is not applicable to NEOM as the inhabitants are not categorised as Indigenous.

5.3.5. NEOM Policies, Codes & Standards

NEOM's Environmental Vision builds on its overarching Vision be seeking to ensure that every development activity undertaken within NEOM is designed and executed "*In harmony with nature*".

Under this vision, NEOM has set two key goals.

1. To enhance NEOM's sea and landscapes through a range of innovative conservation strategies such that critical biodiversity metrics demonstrate a net positive change across NEOM by 2030
2. To implement meaningful action addressing the causes of climate change that collectively achieve Carbon Neutrality by 2030, and progresses towards a net positive impact on the climate into the future, contributing to KSA renewable energy target to achieve 27.3 GW by 2023 and 57.8 GW by 2030, as part of its "Vision 2030" strategy..

NEOM has taken a significant step towards its first goal through its regional planning process by minimizing the total area to be used for urban environments to only 4% of NEOM's total area. The remaining 96% of land and sea areas will be kept for the primary benefit of nature.

Within the 4% of land to be developed, NEOM has made further commitments, including but not limited to:

- Being the first region powered entirely by Renewable Energy
- Leading the revolution toward Circular Economy
- Building cities with an unrivalled commitment to Nature, and
- Fostering, the most Environmentally-engaged citizenry on planet

Collectively these commitments go beyond the generally accepted definition of Sustainable Development and move NEOM into the area of Regenerative Development.

NEOM has therefore developed its RDMS, which includes the development of comprehensive, rigorous, evidence driven and risk based Environmental and Social Impact Assessment (SEA and ESIA) to provide confidence each individual development and the NEOM Development as a whole is moving towards its Vision.

5.4. Site Selection & Analysis of Alternatives

Sections to describe prudent and feasible alternatives to the proposed action. An objective and rigorous analysis of alternatives is required.

5.4.1. Technical Options & No-Action Alternative

Alternatives should consider the 'no action' alternative, as well as 'development alternatives', which are functionally different way to achieve the objectives for instance, consideration of wind farms vs photo-voltaics vs hydrocarbon power plants for electricity provision.

5.4.2. Site Selection and Optimization

This section should consider 'site alternatives', which describes the different locations and/or development footprint sizes/configurations for the project in the context of the following planning documents:

1. Regional Master Plan – please describe if any options for site selection were identified as part of the regional plan
2. Masterplan – please identify any options for alternative sites within the associated masterplan for the development
3. NEOM Nature Conservation Standard for Sustainable Developments – please describe if any site alternatives were considered in response to conservation constraints.

5.5. General Features of the Proposed Development Site

This section shall be used to describe the regional setting and physical features of the development site. All aspects that are relevant to construction and operations should be included. Further information with respect to the proposed development site to be included in Section 5.6

NOTE: Details on the social and environmental (bio-physico-chemical) baseline are to be provided in Section 5.7.

5.5.1. Regional Context

The regional context of the site is to be described here and will include but will not be limited to the following features or aspects that relate to the region in which the site is located:

- Location in Saudi Arabia
- Description of the region/state in which it lies
- Main socio-economic characteristics
- Broad landscape features – coastal plain, mountainous etc.
- Proximity to places e.g. cities, ports
- Regional-scale use of the area
- Large developments, structures and infrastructures in close proximity to site.

5.5.2. General Features

Provide a short overview of the general features that are present inside the development footprint, which should include but not be limited to:

- Topography
- Land cover
- Developments
- Infrastructure/structures within the site boundary
- Landscape features (wadis, coastal, jebels etc.).

5.6. Detailed Information with respect to the Proposed Development

This section shall provide a detailed description of the project with an explanation of its need, context, scope, delivery, and activities throughout the project lifecycle. This section is to be organized as follows;

- Overview;
- Site Layout;
- Plans & Designs
- Construction

- Operations

5.6.1. Overview

Sub-section to describe:

- Project intent of development and how it sits in NEOM context – includes vision, objectives and benefits
- Provide a site location map showing the context on regional urban plan, sub-regional and local levels

5.6.2. Site Layout

Provide a short description of the site layout and support the text with graphics from the broad scale to greater detail as required to complete the picture.

Explain the relationships between development components and their interactions where relevant. Where siting of certain developments or components have been forced due to proximity to environmental resources (e.g. coastal path, marine water intake etc.), identify them.

Where sensitive environmental or social receptors have been “designed-in” to the development, they need to be clearly shown in the graphics and explained in text.

- summary and details per land use typology number of plots, buildings and units, plot area, Gross Floor Area (GFA), building height, population, parking.

Provide a schedule stipulating the development statistics in Table 7-1 in the Template.

Provide an illustration the development footprint within the surrounding context i.e. roads, grades, at-grade uses, building(s) footprint, green and open spaces, connectivity to surroundings, etc.

5.6.3. Sustainability Strategies

Provide a brief narrative description of the key principles, goals, targets, measures, methodologies, and implementation approaches for the set of sustainability strategies attached to the development. Ensure all NEOM Objectives and UN SDGs and Targets that are addressed by each Strategy are noted in the narrative.

The narrative should include brief descriptions of the approach to the following issues, with links to the respective strategies (Appendix A)

- Climate Action
- Resource Extraction
- Landform Protection
- Environmental Quality
- Nature Conservation
- Nature Services
- Human Wellbeing
- Community Continuity

- Heritage Protection
- Biophilic Design
- Building Resilience
- Energy Efficiency
- Water Efficiency
- Circular Economy

5.6.4. Planning & Design

Provide a narrative for the development plan describing the buildings footprint, development density, buildings height, public realm & connectivity, roads, community facilities, utilities, etc. include a narrative and a plan to illustrate the development assets and their ownership/ facility management. For UP, this shall demonstrate the public-private ownership of building assets, utility plots, if known. For iconic or critical assets provide a summary description of the Basis of Design (Basis of Design). If a formal BoD was used for this section, please append document as Appendix B to ESIA.

For Urban Planning, provide illustrations that indicate ground-floor uses and typical levels land uses. This needs to be cross-referenced with the Development Statistics. Provide drawings, diagrams that indicate the buildings footprint, landscape, access, grades, etc. For BLDG, indicate the ground floor uses.

Include a narrative for critical infrastructure or facilities that involve significant resource consumption, are located in sensitive locations or which are likely to generate emissions, discharges or significant volumes of waste during operations.

Append drawings as appropriate for the ESIA in Appendix B

5.6.5.Construction

Sub-section shall address -in details- per project stage (construction, operation) the process, activities, equipment, resources, waste and schedule.

Provide high level description of Construction (including Commissioning) and Operations (including Decommissioning) of the Development.

Development Phasing Plan; overlay of the site plan indicating the development phasing to be cross-referenced with the Development Phasing Statistics (for UP and multiple buildings only); and

Development Phasing Statistics – a schedule stipulating per phase the land use typologies and their number of plots or units, plot area and GFA. A summary per phase is to be provided (for UP and multiple buildings only).

Provide a Manning schedule including detailed manning requirements and curve over the construction activities and packages.

Ensure the description includes sufficient detail to understand potential risks relating to Construction. It is imperative that as much detail is provided within this section to ensure that all associated risks can be evaluated, such as noise and dust emissions, health and safety to workers, risks to both the physical and biological environments etc.

Investigation or Early works that have taken place prior to or in parallel to the ESIA Development.

- Demolition, Ground Clearance and Earthworks

- Blasting and Tunnelling
- Drilling, Piling & Construction
- Marine and Coastal Works (Note: all dredging activities require a separate and dedicated management plan).
- Construction Site and Facility Operations
- Transport and Logistics
- Construction Supply Chain
- Waste Management
- Commissioning

5.6.6. Operations

Include a narrative and a plan to illustrate the development assets and their ownership/ facility management. (and append the Plan as part of Appendix B). This section should link to the various sustainability strategies in Section 5.6.3. Descriptions should relate to the operation and management of critical infrastructure, public realm and iconic assets only and should provide sufficient detail to enable an assessment of risks of operation, including

- Standard Operations
- Ongoing Commissioning & Maintenance
- Infill, Expansion & Upgrades
- Operations Supply Chain
- Waste Management
- Ongoing Commissioning
- Decommissioning

5.6.7. Unplanned Events

Provide here a summary description of the unplanned events that have potential to cause environmental and social impacts and therefore will require emergency planning response. For all unplanned events, describe the *worst-case credible scenario* that can be foreseen and then estimate the likelihood of that scenario occurring.

These can include but are not limited to the following types of unplanned events resulting from the development or activities associated with the development:

- Chemical or hazardous material spill or release
- Explosion
- Transport accident
- Building or structure damage/collapse
- Fire

- Earthquake.

Unplanned events and the potential environmental or social impacts that could result, shall be identified here but risk and impacts assessed at the end of each sub-section in Section 5.9.

5.7. Existing Environmental & Social Values

Provide an introduction to the baseline environmental conditions for the development that includes

- Overview of the key environmental and ecological features at the regional scale
- Biogeographic context of the study site at global, NEOM region and KSA scale

This Section must describe the various aspects of the environment, broken down into physical, biological and socio-economic environments, in which the proposed development is to occur. This description forms the "baseline" on which impacts from the development will be assessed, and ongoing monitoring (if required) compared. It needs to be sufficiently detailed to allow thorough and informed assessment of the impacts of the various facets of the development on each aspect of the environment. The level of description for each of the receptors will be based upon the receptor's sensitivity and the consequences of impacts. In particular, the baseline description must identify whether any Priority Environmental or Social Values are present or likely to be present in the development area. Where Priority Environmental or Social Values are present, additional information may be required to allow quantitative assessment of impact and could include population analyses, area of habitat or area occupied by a community.

The geographic scale for the description of each of the relevant aspects needs careful consideration and will depend on scale of the interconnectedness of the aspect into the surrounding area or landscape, and the zone of impact of the development.

It is important that all information provided through desktop study can be supported by reliable, published reference material. Ideally, all information should be from peer-review journals but grey literature (e.g. consultant reports) is also acceptable after critical review.

Where uncertainty exists in data and information provided may undermine the risk and impact assessment, it must be declared within the relevant section.

Of particular interest is whether the site of the proposed development has ecologically or culturally functional connectedness with any of these features, e.g. an inland roosting location for birds that form part of the designation of a Ramsar Wetland (even if trans-boundary), heritage features that form part of the historic Hajj trail.

Biogeographic information places the development in the context of the surrounding region including human occupation and use, major international biomes, flyways, migration routes etc. Areas designated as Important, Critical or Outstanding Habitat or Environment, will also be described and mapped in graphics to set context for the development site.

Physical Baseline

5.7.1. Climate and Oceans

This section is to provide a desktop description of the climate (weather patterns and atmospheric conditions over time) of the region and is to include all normal weather parameters (temperature, wind, precipitation etc.). It is then to describe the local climate conditions particular to the development area. Any factors that may be more pertinent to each development is to be described here (e.g. solar radiation for a solar farm). Where historic data are not available for the development site, nearest available data should be included with an inference made about the relevance to the development site.

It is important to highlight climatic factors such as increased storm intensity that may impact on Environmental and Social Values described in the RDMS Framework.

5.7.1.1. Climate

This section is to be used to describe existing and projected weather patterns using desktop data and/or baseline data, presuming current predictions on climate change. If weather data have been collected specifically for the development it is to be analysed, described and presented here in summary with the full survey report provided in support of the ESIA. Where both desktop and survey data are available, a synopsis must be offered in the context of climate change and the Environmental and Social Values as described in the RDMS Framework. All weather data collected for the development are to be made available for air quality modeling and must be attached in Appendix C of the ESIA (if required for the development).

Environmental and social values associated with this aspect that will need to be described include:

- Atmospheric carbon
- Other greenhouse gases.

5.7.1.2. Oceanography

An oceanographic study is to be reported here using available information for a wide region reflective of the scale at which oceanographic processes occur. It is to include bathymetry, wave formation, current and upwelling forces, tidal ranges, internal waves (solitons) etc. and may need to draw on climate data too.

Note that engineering requirements of a project may require a different level of detail for oceanography and hydrodynamics than an impact assessment, especially where simulation modelling is needed. Where, survey is conducted, a quantitative summary of the key data and results is satisfactory for the ESIA.

It will be important to describe the general marine environment of the development and surrounds. Bathymetry, tidal patterns, currents, and anthropogenic factors will influence the distribution of the biological features present.

Environmental and social values associated with this aspect that will need to be described include:

- Seawater pH
- Sea surface temperature
- Sea level
- Wave characteristics.

5.7.2. Landforms and Functions

5.7.2.1. Topography and Features

The topography of the region and development area is to be described here together with inherent aesthetic features. Digital topographical mapping may be required to describe the features of the landscape and form. Both raster and contour mapping will be of value, but the resolution is critical and must be established in advance to ensure the appropriate level of detail is obtained. Seismicity may also

be described in here if they are pertinent to the development and the region (Saudi Arabia is subjected to seismicity).

It is important to note that topography in itself can be an important and valued feature for many aspects of environment including; historical and cultural, aesthetics of landscape, physical influence on hydrological and soil processes, and flora and fauna habitat features, and well as the foundation for numerous ecosystem functions and services.

Highlight where landforms are important for landscape aesthetics especially in places of natural beauty, recreation, cultural and spiritual value.

5.7.2.2. Hydrology

A description of surface water and groundwater and its interface with the soils and geology of the region is to be provided here. It must provide sufficient detail to enable understanding of surface and sub-surface water regimes including surface water runoff, wadi flow, groundwater, water table, aquifers etc. The broader regional description is to include the presence of aquifers, artesian wells, major wadis etc. and an overview of abstraction activities.

Precipitation and catchment-scale hydrological processes will be key to understanding the recharge of groundwater resources, and an understanding of the mixing zone between marine sub-surface water and terrestrial sub-surface water will be essential in coastal and near-coastal developments. Where landforms affect groundwater regimes such as faults and wadis etc. they also need to be described. If insufficient data exist for the development site, survey may be needed.

5.7.2.3. Bathymetry

Provide a description of bathymetry and its relevance to coastal formation. It must provide sufficient detail to enable understanding of the marine environment. In particular, provide details that are pertinent to the development. The broader regional description is to include the presence of aquifers, artesian wells, major wadis etc. and an overview of abstraction activities. Where survey data are available, provide a summary and submit the survey report as an appendix.

5.7.2.4. Coastal Processes

More specific and local details of the development site can then be presented but again must reflect the scale at which hydrodynamic forces work.

Coastal processes refer to the physical marine environment such as the tides, currents, waves and sediment transport. The hydrodynamics of the marine area is to be described using desktop study and publicly available material and must be at a scale that reflects the processes involved. If insufficient data exist – and depending on the nature of the proposed development –survey may be needed, e.g. through deployment of metocean buoy.

5.7.3. Geology and Soils

5.7.3.1. Geology

A regional description of the underlying rock (geology) of the region is to be provided here that is sufficient to enable understanding of the subterranean environment. The regional description is to be large scale and provide an overview of the landforms and geological systems such as mountains, wadi formation etc. It is also to provide a more detailed description of the underlying geology that falls within the site boundaries. Where geological formations include caves, they are to be identified.

Minerals geological resources will also need to be described in this section where they have importance to the development e.g. rock-aggregate extraction.

5.7.3.2. Soils

A description of the natural soils (Pedology) of the area in and around the development area is to be provided that will identify the soil types, formation processes (e.g. alluvial, colluvial etc.), wetting and nutrient characteristics. Describe the diversity of soils and their productive potential. Survey may be required where soils are a value resource.

5.7.4. Environmental Quality

5.7.4.1. Air Quality, Noise & Light

A study of air quality including chemistry, noise and light conditions is to be provided in this sub-section and will include a description of the ambient air quality and potential sources of airborne particles or contaminants in and around the development site. Where historic data are not available for the development site, nearest available data should be included with an inference made about the relevance to the development site. Sources of existing atmospheric inputs that impact on air quality will include natural sources (e.g. wind-blown sandplains) and anthropogenic sources such as roads, factories etc.

Surveys may be required to determine conditions on the development area and provide a platform for ongoing monitoring.

5.7.4.2. Soil & Groundwater Quality

A desktop study of the soil and groundwater quality is to be provided in this sub-section to identify where the natural quality of soils may be degraded. Sources of degradation may include contamination, mechanical disturbance, acidification, salinization, nutrient enrichment etc. Activities that can cause degradation include cultivation, effects of grazing, industrial activity etc. Sources of information are to be clearly identified. Surveys may be required to determine conditions on the development area.

If waste disposal or hydrocarbon storage is suspected or known, soil sampling should be undertaken and directed by a Soil Sampling Plan. The Soil Sampling Plan must contain a list of the parameters to be sampled in agreement with NEOM. The soil samples shall be analysed at an accredited laboratory that has been pre-approved by NEOM. Intrusive soil sampling and laboratory results will be reported in a Soil Sampling Survey Report and include sampling locations, method of excavation etc.

Litter will need to be described in this section and will consider surficial and sub-surface litter. Litter quantification will be required for ongoing monitoring purposes.

Soil quality standards and targets used to determine levels of contamination will be those defined in the Dutch Ministry of Infrastructure and Water Management (2013) Soil Remediation Circular 2013.

A desktop study for Unexploded Ordnance (UXO) must also be considered under soil quality and the risks of UXO presence detailed here.

5.7.4.3. Marine Water & Sediment Quality

An appraisal of the ambient water quality conditions for the development area is to be presented here. The study should describe bio-physico-chemical factors throughout the area and water column. Biological factors will include planktonic community, chlorophyll profiles and BOD. Physical properties will include temperature and light penetration profiles through the water column together with the potential

for stratification (thermoclines, haloclines etc.). Chemical factors are to include profiles for salinity, dissolved oxygen, pH, heavy metals, nutrients, hydrocarbons (and other contaminants if relevant, e.g. TBT), total suspended solids and NORMs. Key environmental features that can influence water quality such as wadi outlets, upwellings and seasonal change should also be described as should anthropogenic influences such as boat harbours, ports, sewage outflows or industrial development (even if without discharges). Marine litter entrained in the water column will also need to be described.

The physico-chemical characteristics of the sediments across the development area will be described. Physical properties will include sediment size composition, whereas chemical factors are to include pH, heavy metals, nutrients, hydrocarbons (and other contaminants if relevant, e.g. TBT) and NORMs. Key environmental features that can influence sediment quality such as wadi outlets should also be described as should anthropogenic influences such as boat harbours, ports, sewage outflows or industrial development (even if without discharges). Benthic marine litter will also need to be described.

Litter will need to be described in this section and may need to include that on the surface and in sediments or substrate. Litter quantification will be required for ongoing monitoring purposes.

A desktop study for Unexploded Ordnance (UXO) must also be considered under marine sediment quality and the risks of UXO presence detailed here.

5.7.4.4. Underwater Noise

Existing levels of underwater noise as described in the publicly available literature should be presented here. A breakdown in the sources of noise (e.g. biological, seismic and anthropogenic), and where these noise sources are located. A frequency energy breakdown for the key sources will also be essential. Ambient noise levels under various sea-state conditions will also be described.

A summary of the ambient noise levels recorded on site will be presented here with the Underwater Noise Survey Report being submitted in support of the ESIA.

Biological Baseline

5.7.5. Terrestrial Ecosystems

5.7.5.1. Species

This section should present baseline data and background information that allows a robust ESIA to be conducted in compliance with IFC's Performance Standard 6, Biodiversity Conservation and Sustainable Management of Living Natural Resources and NEOM's Core Environmental Principle of: "Understanding: Science to Action".

Floral species that are classed as Priority Natural Values (PNVs) - Describe each priority flora species and their habitats, soil requirements, seasonal influences etc. Maps will be essential to explain the range of each priority floral species within the region and within the development site. Although all species expected (recorded or otherwise) should be presented as a list, the species descriptions should focus only on priority flora species.

Fauna PNVs - Describe each priority fauna species and their habitats, vegetation community requirements, seasonal influences etc. Number of each species present and relative abundance outside of the development area may also be required when impacts on priority species are expected. Locations of sampling and records of priority fauna will be mapped together with their estimated habitat distributions. Although all species expected (recorded or otherwise) should be presented as a list, the species descriptions should focus only on priority fauna species.

Each of the priority flora and fauna species will also be defined in terms of their habitats and in which vegetation community or ecosystem they will occur. By default, the veg communities mapping will provide range maps for each priority species.

A summary of the flora and fauna species diversity and priority species will be provided and survey report(s) will be submitted to support the ESIA. The ESIA will include a statement on the botanical and faunal diversity and include information about the number of species that can be expected in the region and on the development site.

5.7.5.2. Communities

A desktop study of the community and ecosystem diversity shall be presented here and include information about the biomes present (e.g. woodland, grassland etc.) and vegetation communities. Those communities and ecosystems classed as PNVs shall be clearly defined. Key features of the landscape that define where specific biomes occur e.g. plateau, wadis etc. will also be described and will include those that are known to occur inside the development boundary (e.g. from aerial photograph).

Describe in broad terms the vegetation communities identified within the development boundary and the condition of each in regard to grazing, soil, groundwater and other influences. Locations of sampling points, vegetation communities and records of PNVs will be mapped.

Key features of the landscape that define where higher faunal diversity is likely to occur including international migratory bird flyways and stopover points. Of vital importance is that the desktop study needs to be robust enough to steer the timing and spatial scales of botanical and fauna surveys as well as the need for experts in conducting the survey.

5.7.5.3. Ecosystem Functions & Processes

This section is to provide a desktop study of the key ecosystem functions and processes that are important to maintain biodiversity on the development site and surrounding area. These include pollination, seed dispersal, symbiotic fungi, vegetation productivity etc. Depending on the scale or location of the development, a description of landscape ecology may also be required. This section should also include a description of important ecological processes that support ecosystem function with the aim that alterations in the processes may have repercussions for the functions. Examples of ecosystem processes include:

- Biological movement
- Habitat connectivity
- Interactions of feral species among others.

The key taxa that form functional guilds within each ecosystem function e.g. pollinators, can also be described here.

5.7.6. Marine Ecosystems

5.7.6.1. Species

This section will contain a desktop study that describes the marine biota previously recorded in the development area or that could be impacted by the development. The information will be based on publicly available literature and will include a reference list. It can be divided into marine plants and marine fauna with further division into communities within each marine zones such as pelagic, benthic supralittoral etc.

Where baseline survey is required, a summary of the species diversity and priority species will be provided and the survey report(s) will be submitted in support of the ESIA.

5.7.6.2. Communities

A desktop study of the marine biodiversity will be presented here and include information about the number of ecosystems expected (e.g. coral reefs, seagrass meadows etc.). Key features of the marine environment that affect distribution (e.g. tidal patterns, currents etc.) will also be of interest here.

5.7.6.3. Functions & Processes

This section is to provide a desktop study of the key ecosystem functions that are important to maintain biodiversity on the development site and surrounding area. These include dispersal of gametes and larvae, primary production, habitat for species etc.. This section should also include a description of important ecological processes that support ecosystem function with the aim that alterations in the processes may have repercussions for the functions. Examples of marine ecosystem processes include:

- Biological movement
- Habitat connectivity
- Energy flow.

The taxa that form functional guilds within each ecosystem function e.g. detritivores, can also be described here.

5.7.7. Ecosystem Services

This section will contain a description of the benefits provided by ecosystems to human interests and will form an important component of NEOM's core assessment principles. Ecosystem services that are pertinent to the development site can include for example:

- To aquaculture for siting fish farms
- To human culture in the form of visual aesthetics, recreational, tourism or spiritual health
- To economies as sources of food, commercial fish species or medicinal products.

5.7.7.1. Supporting Services

This section is to provide a study of the supporting ecosystem services that provide community benefits in the study area and are important for the development site and surrounding area. Supporting services are essential ecosystem services that allow other ecosystem services to be performed. These can include nutrient and water cycles, formation of habitat (erosion control) and biomass, all of which are required for the ongoing health of ecosystems that support human needs. The supporting services described should include those that are intrinsic to the success of the development e.g. agriculture or horticulture, and to any rehabilitation program that is linked to the development.

Site-specific information will include finer detail of the aquifers, fossil water, water table below a development boundary and at the regional scale. Key aspects of geology that will influence groundwater movement and containment such as fissures, discontinuities etc. need to be included.

Where existing supporting services have a negative impact on the ecosystems and human functioning, for example through excessive groundwater extraction, they need to be identified.

Where the supporting service is provisioned by key taxa, they should be clearly identified.

5.7.7.2. Regulating Services

This section is to describe the regulating ecosystem services that have an important role in or around the development site. Regulating ecosystem services are those that maintain or control aspects of the ecosystem such as vegetative erosion control, regulation of water flow and cycling, and biological control. The regulating services on which the development site may depend such as pollination, should be focused on and its vulnerabilities to perturbations that the development site could trigger.

Regulating services may also be present in a negative state for ecosystem functioning such as over-grazing from camels and goats for example.

Key taxa that provide a regulating ecosystem service should be clearly described.

5.7.7.3. Provisioning Services

All humans require food, water and many other goods that they acquire directly from natural ecosystems. All such functions are served by provisioning ecosystem services. These are immensely diverse and include food, forestry goods, fuels and medicinal products. Provisioning services that are prevalent and important in the development site or surrounds are to be described here, together with sensitivities and critical components as they pertain to the development and impacts.

Provisioning services of importance to cultivation and fisheries will also be described here. These can include groundwater, pollinators for cultivation, and marine water quality and nurseries for fisheries.

5.7.7.4. Bio-cultural Services

Biocultural services are seen as an increasingly important ecosystem service to human health and wellbeing which is a core value within NEOM. and include the benefits ecosystems provide from tourism, recreation, aesthetic appreciation and spiritual health. Biocultural services will be a mainstay of NEOM's tourism trade and wellbeing policies and therefore need to be described here in regards to the impacts and the benefits provided by re-greening, rehabilitation and reduction of grazing. Areas of focus can be for taxa or certain features e.g. coral reefs or mountainous areas for example.

Socio-economic Baseline

5.7.8. People and Communities

This section is to contain a demographic study of the existing human population and communities of the region, the development site and surrounding area. This section will contain a desktop study of the known health, wellbeing and fitness values, metrics and indices for the workers and resident population as well as targets for future planned outcomes across the region, the development site and surrounding area.

Detail required will include support services for the particular sector such as local accommodation for construction workers as well as provision of health and welfare. It will also contain a description of the critical aspects that supports local cultural, social or community activities whether inside or outside of the development area or the wider NEOM and Saudi boundaries.

Information provided should include employment figures for each of the industries and business sectors and a description of the opportunities for all sectors of the community. People and communities living

outside of NEOM and the development site will need to be included if they are employed within industry and business that lies in NEOM or the development site.

5.7.8.1. Health & Safety

All public and private health and safety services that may be impacted by the development will be described here and can include educational services in the development area or surrounds. The section should also provide summary information and statistics on human health and safety metrics, where available as an indicator of baseline conditions in the existing population.

5.7.8.2. Education, Employment & Welfare

All public and private educational services that may be impacted by the development will be described here and can include educational services in the development area or surrounds. The provision of junior, senior and tertiary education will be described, as well as vocational and professional training facilities. Of interest will be the levels of education in the existing population where the local population is educated and whether critical services such as transport will be impacted by the development.

5.7.8.3. Wellbeing and Social cohesion

Information relating to wellbeing and social cohesion should be presented if known. The provision of services relating to community wellbeing, as well as community driven events or activities relating to cultural identity and social cohesion should be described, if known.

5.7.9. Land Use and Aesthetics

This section is to contain a study of the land-use in the region, the development site and surrounding area. It will contain a breakdown in areas for each of the uses and shall include land areas that remain undesignated. Importantly, it will attempt to quantify the area and value of each land-use class to the communities involved. Land-use classes of importance include the following:

5.7.9.1. Cultivation (agriculture, horticulture, aquaculture etc.)

Describe the cultivation types present in or around the development site and any other information pertinent to the development.

5.7.9.2. Settlements

Describe local settlements and number of dwellings. Classes shall include permanent and temporary worker accommodation etc., and whether full or part-time (e.g. second-homes) residences. Describe details about formal and informal ownership of land. Healthcare facilities also need to be described here where present.

5.7.9.3. Green spaces

Green space is defined as undeveloped areas and may include unvegetated desert or coastal areas e.g. beaches, and may also be used for recreation. Include all green space within the development footprint and any connectivity between separate areas.

5.7.9.4. Recreational Areas

These outdoor areas are modified for the specific purpose of public recreation and include parkland, cycle tracks, walking areas (e.g. Corniche) and playing areas. They will be defined per category of recreation. Recreational facilities such as gyms, sports halls, swimming pools etc are described under business or government.

5.7.9.5. Cultural Sites

This section will contain a desktop study of the known and potential heritage and archeological values of the region, the development site and surrounding area. It will also contain a description of the critical cultural heritage sites it contains that supports local cultural, religious or tourism activities whether inside or outside of the development area or the wider NEOM and Saudi boundaries. All cultural, heritage and archaeological sites will be described here and will include current and disused religious buildings, through to all significant and minor features.

5.7.10. Built Assets

The existing built assets and critical infrastructure that lie within the footprint or that may be impacted by the development need describing here. These infrastructure, structures, buildings, and other features should also be described in terms of the provisions these features offer in supporting local communities. Critical infrastructure will be highlighted and includes those items that provide support for industry, and without which they would be unsustainable or unfeasible. This section will need to identify any such threads that may cause wide-spread effects as a result of the development impacting on existing infrastructure. The following features need to be separated out of the information:

5.7.10.1. Housing

Types of housing assets are to be described here and relate only to dwellings and camps. Temporary accommodation such as hotels are dealt with under commerce.

5.7.10.2. Potable Water & Water treatment

All built assets pertaining to water acquisition, treatment and delivery will be described here and will define whether the assets are above or below ground, dimensions, volume and flow etc.

5.7.10.3. Energy and Transmission Systems

All built assets pertaining to energy generation and transmission will be described here and will define whether the assets are above or below ground, dimensions, flow-volume, rating etc. and the purpose and location of the end users with quantities. Energy utilities are to include gas, coal trains, electric and oils where the oil is delivered by pipelines. Oil and gas transported by road will be covered elsewhere.

5.7.10.4. Transport systems

Include built assets for all means of transport including terrestrial and marine, roads, railways, cycleways ports, marinas and airports/aerodromes. Traffic flows and volumes will also be included. It will also contain a description of the critical mobility sites or elements that support local cultural, religious or tourism activities whether inside or outside of the development area or the wider NEOM and Saudi boundaries.

5.7.11. Economic Activities

This section will contain a study of the industry and commercial interests of the region as a whole, what occurs within the development site, and further interests that may be impacted in the surrounding area.

Adequate detail will be required in this desktop study to enable a full evaluation of any impacts that may accrue as a result of the development. The section should ensure focused descriptions of elements of the economic system that are important to issues such as energy and water demand, waste generation and circular economy opportunities.

Where local economic interests are likely to benefit from the proposed development, the information provided would ideally include volumes or percentage increases in business.

5.7.11.1. Industry and Construction

Describe industrial businesses present in the development site and in the surrounding area, or that are dependent on the site for certain other activities e.g. energy and water. It is important to draw out the support services given by other economic activities. Oil and gas acquisition will form part of the industrial economic activity whereas, distribution will not. Importantly, the economic value of each industrial sector to the region and the employment opportunities will be included.

Describe construction businesses present in the development site and in the surrounding area, or that are dependent on the site for certain other activities e.g. resources. It is important to draw out the support services given by other economic activities. Importantly, the economic value of each building sector to the region and the employment opportunities as a result of the development occurring will be included.

5.7.11.2. Commerce

Commercial business interests include retail, service providers (e.g. engineers, accountants), hospitality, distribution, logistics, etc. All commercial interests are to be described and will include the economic value for each of the sectors registered in the area.

5.7.11.3. Government

Government support commercial and economic interests of the area and this section is to contain a description of all municipal services and should include but not be limited to transport, fire and public safety, social care, libraries, waste management and trading standards among others.

5.7.11.4. Waste Management

Waste management is an integral process of any proposed project and needs to be taken into consideration, with respect to how both general and hazardous wastes are handled.

During the process it is key that all waste streams are identified, both for construction and operational activities. The types of waste need to be noted, potential volumes, identification of risks and impacts as a result of waste generation, establishment of a waste hierarchy (such as prevention, reduction, reuse, recycling, recovery, removal and final disposal options, adoption of Good International Best Practices, use of contractors and overall operating and management procedures for waste to be considered.

5.8. Risks & Opportunities Assessment Approach

The environmental and social risk assessment for the Development proposal has been completed using the NEOM *Environmental and Social Risk Assessment Procedure* (2020). The Procedure is based on international best practice approaches, including *ISO 31000:2018 Risk Management - Guidelines* and Australian Standard/New Zealand Standard (AS/NZS) *203: 2012 Managing Environment-Related Risk* (Standards Australia/Standards New Zealand, 2012) and meets the requirements of IFC Performance Standard 1 - Assessment and Management of Environmental and Social Risks and Impacts (2012).

The risk assessment for the Development has incorporated information collated from Baseline Surveys of the Development area, Desktop studies using published literature, design plans and sustainability strategies for the Development the best available information relating to construction and operational planning and where relevant predictive modelling to understand the potential environmental and social risks posed by the Development.

The Risk Assessment Procedure follows a basic set of steps including:

1. Describing the technical, spatial and temporal aspects of the Development that have the potential to negatively (or positively) effect Environmental and Social values, including the Area of Influence of identifiable risk factors, light, noise, pollutants etc. (refer below)
2. Describing the overlap with Environmental and Social values that may be sensitive to the identified risk factors
3. Determine the potential worst-case Consequence of the interaction between Risk Factor and Value without the presence of any environmental management or mitigation measures. This is conducted using the NEOM Consequence Definition Table, attached to the Procedure
4. Predicting the Likelihood of the worst-case Consequence occurring if standard management and mitigation measures are in place using industry statistics, expert opinion or other benchmark metrics for similar risks
5. Once the inherent risk is identified, the risk assessment requires a qualitative analysis of the proposed management measures to determine if the risks can be demonstrated to be As Low As Reasonably Practicable (ALARP)
6. Consequences deemed acceptable are then defined as “Predicted Outcomes” against which Key Performance Indicators (KPIs) can be assigned as a benchmark for monitoring
7. Calculating the Inherent Risk using the NEOM Risk Category Matrix, which combines Consequence and Likelihood in a structured method to rank risks (Refer to NEOM Procedure for Environmental Social Risk Opportunities Assessment for Development Projects [NEOM NEV PRC 602]) Risk Classification

A critical element of the NEOM Environmental and Social Risk Assessment Procedure is to identify the types of risk (Risk Factors) presented by the Development as well as to estimate the respective maximum areas that may be influenced. Risk Factors that have been identified for the Development, and which are described in more detail in the following sections should include discussion relating to:

Modifications to Physical features including changes or damage to

- Land Surface or Feature Alteration
- Coastline Deformation
- Seabed Disturbance

- **Consumption** of primary resources including minerals, biological elements and freshwater including:
    - Groundwater Abstraction
    - Minerals and materials extraction
    - Natural Resource Use
- **Pollution** of environmental quality including air, soil, ground water, marine water and sediments from
    - Air Emissions, including light and noise
    - Dust Generation through surface disturbance
    - Discharges to marine or freshwaters
    - Spills and Discards of Liquid or Solid Wastes to land or surface waters
    - Turbidity generation through seabed sediments disturbance
- **Interactions** with residents and native flora or fauna through
    - Personnel Behaviours
    - Mechanical Operations
    - Biological Introductions

In addition to describing them, it is important to determine the cumulative area over which each Risk Factor may have an influence. This is referred to as the Area of Influence (AoI) and is determined using a simple technical spatial analysis by combining information on the expected location of activities producing the Risk Factor and the maximum distance from this site that the Risk Factor can be observed above background ambient conditions.

Identified Risk Factors and their respective Areas of Influence are described in the following Sections.

1. Modifications

For each of the following, describe the types of development designs, activities or operations that may contribute to negative or positive modifications to physical features or environmental elements as a result of:

- Land Surface or Feature Alteration
- Coastline Deformation
- Seabed Disturbance

Provided descriptions should include the following information:

- The source of risk/opportunity and expected location within or surrounding the Work Site
- The magnitude including potential intensity, density, concentration
- The temporal characteristics including timing, seasonality, frequency and/or duration
- The type of consequence it may induce including changes to ecological functional performance, social or commercial utilization, and/or aesthetic or heritage value

2. Consumption

For each of the following forms of consumption, describe the types of development designs, activities or operations that may contribute to negative or positive risks to primary resources as a result of:

- Groundwater Abstraction
- Minerals and materials extraction
- Natural Resource Use

Provided descriptions should include the following information:

- The source of risk/opportunity and expected location within or surrounding the Work Site
- The magnitude including potential intensity, density, concentration
- The temporal characteristics including timing, seasonality, frequency and/or duration
- The type of consequence it may induce including changes to functional performance and/or aesthetic or heritage value

3. Pollution

For each of the following forms of pollution, describe the types of development designs, activities or operations that may contribute to negative or positive risks to environmental quality as a result of:

- Air Emissions, including light and noise
- Dust Generation through surface disturbance
- Discharges to marine or freshwaters
- Spills and Discards of Liquid or Solid Wastes to land or surface waters
- Turbidity generation through seabed sediments disturbance

Provided descriptions should include the following information:

- The source of risk/opportunity and expected location within or surrounding the Work Site
- The magnitude including potential intensity, density, concentration
- The temporal characteristics including timing, seasonality, frequency and/or duration
- The type of consequence it may induce including changes to functional performance and/or aesthetic or heritage value

4. Interactions

For each of the following, describe the types of development designs, activities or operations that may contribute to negative or positive interactions with flora, fauna or residents as a result of:

  - Personnel Behaviours
  - Mechanical Operations
  - Biological Introductions

Provided descriptions should include the following information:

- The source of the interaction and its expected location within or surrounding the Work Site
- The magnitude of the interaction including potential intensity, density, concentration
- The temporal characteristics of the interactions including timing, seasonality, frequency and/or duration
- The type of consequence it may induce including changes in the behaviours, wellbeing, condition, abundance or long-term distribution of a potentially affected value.

ii. Risk Workshops

Briefly Describe the key workshops, or other collaborative processes used to derive the risk assessment outcomes that are summarized in the following section. Non-significant risks and opportunities and treatments to achieve As Low As Reasonably Practicable (ALARP) and As High As Reasonably Practicable (AHARP) shall be presented in the ENVID Hazard Matrix (Appendix D).

b. Risk and Opportunity Assessment Summary

This section should be set out using the same headings for Environmental and Social Values described in Section 5.7. Within each corresponding section the report shall identify the following key elements in the risk assessment process:

- Sustainability Objectives
- Analysis & Evaluation
- Management and Intervention
- Acceptability
- Key Performance Indicators

General guidance relating to the information required under these sub-headings is provided in the following sections. Specific or contextual guidance for identified environmental and social values is provided in the subsequent sections.

i. General Guidance on Risk Sub Sections

Risk and opportunity assessments will be conducted for each of the value groups (such as sensitive ecosystems, local business, health and safety, tourism and recreation etc) present in and around the development area and will be conducted in accordance with NEOM's *Procedure for Environmental and Social Risk and Opportunities Assessment* (NEOM-NEV-PRC-602) which is summarized in Section 5.8.

The level of detail required will depend firstly on the level of assessment with Conceptual SEA (Development Category IV) being generally "in principle" and ESIA focusing on the quantitative level as far as possible. However, it is important to note that if adequate information and data are available and a full and satisfactory assessment can be conducted at the higher level, the opportunity should be taken, as this may allow site preparation to begin.

In addition to the influence from the level of assessment, the level of detail provided during assessment will be driven by the potential consequences and sensitivity or priority level of the value, with heavily-impacted, high-priority values demanding more attention than low-impacted, low-priority values. Each step shall be laid out as per the following sections.

1. Sustainability Objectives

State here the objectives and goals relevant to this system, e.g. Planet, Reversing Climate Change: Minimize climate change drivers and maximize capture and storage opportunities.

2. Analysis & Evaluation

Briefly describe the key or most sensitive receptors being assessed under this section and the nature, scale (e.g. AoI), duration and effect pathways (e.g. via media such as air, water, soil, noise, physical

interaction etc.) for the risk being assessed. For example, “permanent site lighting affecting the nesting behaviour of marine turtles using the beach adjacent the development footprint”.

In the corresponding section, provide a summary table of the significant risks and opportunities that the Development presents to key or sensitive receptors associated with each Value Group as well as setting out the key treatments derived to reduce risks to ALARP.

Non-significant risks (and opportunities) and treatments to achieve ALARP (for risks) and AHARP (for opportunities) are not to be included in the general text, but instead will be presented in the ENVID Hazard Matrix.

In this section, also describe risks or impacts on the Value group from the unplanned events identified in Section 5.7.7. Identify and describe the *worst-case credible scenario* for unplanned events and estimate the likelihood of that event happening.

3. Management & Intervention

Please describe the management and intervention measures that have been applied to minimize identified risks / or maximize identified opportunities and describe that will be implemented as a mandatory condition of approval, as well as any additional controls that may be considered if environmental risks exceed the risk ranking noted above during execution. Please describe how risks are managed to ALARP and AHARP.

4. Acceptability

Please describe the predicted environmental consequences over the lifecycle of Development in terms of each Execution phase assuming mandatory environmental controls are implemented. Discuss the following extraneous conditions which may influence the predicted outcome including if additive effects and future climate change vulnerabilities are realized.

Provide a justification of why the Predicted Outcomes are considered acceptable in the context of the NEOM Environmental Vision. Where appropriate, describe any rehabilitation, compensation or offset programs that are required to ensure Acceptability.

5. Key Performance Indicators

List the environmental and social values within this aspect that have been shown to be actually or potentially impacted by the development. Against each of these values, identify Key Performance Indicators (KPIs) and any interim targets or thresholds against which environmental performance will be judged. These KPIs will established the exceedances which, if triggered, will invoke further management actions to ensure the predicted outcomes are met. Additional management actions may include associated rehabilitation, compensation or offset programs.

As an example, potential KPIs for climate change risks would be to report and record Scope 1, 2 and 3 emissions, refer to below for further detail:.

- Scope 1 are direct Green House Gas emissions directly from operations that are owned or controlled by the reporting company.
- Scope 2 are indirect Green House Gas emissions from the generation of purchased or acquired electricity, steam, heating or cooling consumed by the reporting company.
- Scope 3 are all indirect emissions, not including Scope 2, that occur in the value chain of the reporting company, including both upstream and downstream emissions.

ii. Value-specific Considerations

The following sections contain specific discussions relevant to each of the Value groups. This is not an exhaustive guide for each Value Group but instead identifies certain peculiarities or requirements relevant to each.

1. Climate Change

The risk of climate change is not controlled by NEOM, but instead is in the collective hands of all humans, institutions, businesses and governments: "*It is the greatest of all mistakes to do nothing because you can only do little*" (Sydney Smith, 1856). NEOM is intent on meeting the challenges of KSA *Vision 2030* and carbon neutrality in particular. To this end, the Climate Change Management Plan will be developed for all SEA's and will be the basis upon which the risk and opportunities section will be formed.

Focus here on the important aspects of the development that can influence climate and oceanic systems. High-energy demands such as concrete, transport and energy will form the key factors and will need to be quantified as far as possible. This area will provide opportunities in green concrete and energy generation during operations.

Whilst the area of influence for climate change will be global, local change will be key to the risk assessment through localized effects of Sea Level Rise (SLR) (coastal), storm intensity (exposure to wind) and ambient temperature (urban environs). Mitigations with respect to minimize impacts as a result of climate change will need to be considered, such as coastal setback as one of many mitigation measures that should be investigated.

2. Landforms and Functions

Risk factors that can potentially affect change to landforms and functions will be Interactive in nature and include direct effects such as excavation and raw resource acquisition. However, change to landform and function may also result from secondary effects such as long-shore drift resulting from changes to coastal morphology. Therefore, offsite impacts will have to be recognized where they may occur.

3. Environmental Quality

Environmental quality includes a complex group of factors ranging from incidental noise or fugitive dust, planned emissions of gases, and unplanned effects such as accidental spillages or littering.

The area across which emissions and discharges may occur can be extensive and cross-boundary. However, it is important to identify range to observable or detectable change and where that change is potentially material rather than that which may have none or little effect.

UXO is not considered a high risk in NEOM, but the potential consequences are too high to ignore. Where desktop studies identify a potential for UXO in either the terrestrial or marine environments, this factor must be treated seriously.

4. Ecology - Terrestrial

Risk factors for terrestrial ecology will need to focus on land clearance and vegetation removal and then define what flora may be impacted as a result of the clearance and loss of habitat. All ecosystems, biotopes and species will be included in the overall assessment but only those Values that may be significantly affected will need to be discussed in the main document. Similar attention must be given to

the fauna values present in the development area. While this section will focus primarily on the effects on PNVs, widespread and extensive impacts on common Values will also need to be described where landscape-scale effects may be significant or have the potential for local extinction.

Factors that may affect ecological processes such as movement, predation, foraging and mating etc, will also need to be discussed and assessed and how they may be influenced by the development and these may include:

- Changes in local hydrology
- Habitat loss
- Habitat degradation
- Ongoing mortality from subsequent site activity
- Habitat fragmentation and subsequent isolation or restrictive movement through landscapes
- Feral predators and introduced and invasive species
- Disturbance from light and noise emissions.

Effects on migratory species will need careful attention and especially disruption to movements through the landscape.

5. Ecology - Marine

The risk and opportunities assessment for marine ecology will need to focus first at the ecosystem and biotope level. and then define what flora and fauna may be impacted as a result of the loss of habitat. All ecosystems, biotopes and species will be included in the overall assessment but only those Values that may be significantly affected will be discussed in the main document.

Factors that may affect ecological processes such as movement, predation, foraging and mating etc, will also need to be discussed and assessed and how they may be influenced by the development and these may include:

- Habitat loss
- Habitat degradation
- Ongoing mortality from subsequent site activity
- Disruptions to connectivity and movement
- Introduced and invasive species
- Disturbance from light and noise emissions.

Effects on mobile, wide-ranging and migratory species will need careful attention and especially disruption to movements through the marine environment. Species with restrictive ranges or environmental conditions e.g. bathymetry will be particularly vulnerable to fragmentation and loss of connectivity.

6. Ecosystem Services

Services offered by ecological Values on which society, culture and economics benefit or depend are to be described here. Only those relevant to the current and intended land uses will need to be described and can be terrestrial or marine. The AoI for ecosystem services can extend beyond the boundary. These are to include:

- Supporting Services
- Regulating
- Provisioning
- Bio-cultural.

Of particular interest will be ecosystem services currently present on the development site or surrounding area, on which the success of future developments depends. Cultivation and recreational aspects of development are two such examples.

7. People & Communities

Effects on people and communities that are present in the development area are sensitive issues that need careful consideration throughout NEOM. Risk factors include pollution, consumption and modification to human activities, behaviours, social interactions physical condition. The AOI for impacts to people and communities can be readily understood but difficult to define due to the highly mobile and interactive nature of human societies. People and community values that should be addressed include:

- human health and safety
- social welfare factors such as education, employment, health services
- Wellbeing and social cohesion

8. Land Use & Heritage

Land use and Aesthetics relate to the utilization of private and public land for the pursuit of human, economic, social, cultural or recreational activities. These elements are critical in supporting social cohesion and human wellbeing and all developments should understand the potential risks and opportunities relating to these aspects. The risk assessment should as a minimum address:

- Existing land uses including use of public spaces for cultural or recreational activities
- Heritage and Archeological Sites
- Aesthetics (including marketability) of land

iii. Built Assets

Risk and opportunity assessment for built assets are generally easily defined in terms of consumption and modification factors, though to a lesser extent may be impacted by pollution or interaction. Risks are typically associated with direct physical damage, demolition and removal of utilized buildings but may also extend to the market value of assets due to changes in the surrounding area. The risk assessment should as a minimum address:

- Housing, including physical and economic displacement
- Community critical infrastructure
- Connectivity within and between settlements

iv. Economic Activities

Risk and opportunity analysis for economic activities relates to the function and performance of economic entities and the flow of materials and other economic factors into and out of the local economy. Risks are typically associated with consumption of materials, displacement of economic activities and modification to market conditions such as through increased/decreased competition. Risks and opportunities should as a minimum include:

- Changes or impacts to existing businesses and commercial activities
- Changes in the availability of critical materials or energy which alter the commercial sustainability of existing businesses
- The level of wastes and recovered resources bot applicable to municipal and hazardous waste streams

c. Cumulative Impacts & Net Benefits

This section is to be completed taking into consideration the IFC's Good Practice Handbook: Cumulative Impacts Assessment and Management (2013). This section is integral to NEOM's sustainability aspirations and will form the fundamental process of development approval.

i. Cumulative Impact Assessment

The scale of the cumulative impact Assessment (CIA) process will be dependent on the scale of the predicted impacts from the current proposal and may be a rapid process for minor to moderate impacts, or more involved, robust CIA where the predicted impacts on receptors are greater than moderate or involve many moderate impacts. The scale of the CIA will be determined in the Scoping Process for the ESIA in consultation with NEOM Environmental Department.

The overall process and expected outcomes from CIA are:

1. Undertake the EIA for the current development or activity to identify the actual and potential impacts (e.g. in the existing document above) and a list of valued receptors
2. Identify other known developments or activities, and include clearly defined conservation or wildlife enhancement programs
3. Identify future qualifying impacts (predicted condition) on receptors that are common to some or all developments or activities included in the CIA
4. Establish the contribution (proportion) of the current development to the cumulative impacts
5. Identify offsets or benefits common to impacted receptors identified in item 3
6. Conduct Net Benefit Assessment
7. Determine the net impacts or benefits of the current development when considered cumulatively with other developments or activities and ascertain whether the project complies with NEOM's Core Goals, Aspirations and Commitments (see Section 4.2).
8. Further avoidance, minimization, management measures or offsets based on unacceptable outcomes from the CIA (where relevant)

9. Provision of collaborative monitoring programs and subsequent data from a wider geographic region than in isolation, to help inform future risk and impact assessment.

The Consultant is to note the difference between cumulative assessment (between two or more proposals) and in-combination assessment (within a single proposal). For example, a number of individuals of a given species may be directly impacted by translocation, incidental injury and noise disturbance, and be indirectly impacted by reduction of foraging area on site, loss of prey items etc., but positively impacted by habitat improvement and prey abundance following rehabilitation elsewhere on the development. Each section for each receptor must include a net benefit assessment which will identify individual impacts and the combined effect of each. It is assumed that the in-combination and net benefit assessment on each receptor from the current development or activity has already been conducted above.

NOTES:

- CIA is generally difficult to conduct in practice because of the conflicting and competing nature of developments, government and the stakeholders.
- NEOM anticipates that challenges normally associated with CIA are irrelevant in NEOM because the proponent, regulator and stakeholders are generally one and the same and will be collaborative in nature due to the common goals and aspirations.
- It is to be understood that robust communications between the proponent, consultant and NEOM Environmental Department will be necessary to identify and implement further studies.
- As with the ESIA process, CIA necessarily requires iterative implementation between design, quantification of impacts and reconsideration of design or management measures.
- Predicted impacts through the CIA process are measured in the response of a receptor to the overall suite of impacts.

Whereas the EIA section is focused on the Project and then impacts on the receptors, CIA will instead, focus on the range/distribution of each of the receptors that are incrementally impacted by both/all developments. It is suggested the CIA process is broken into the following steps to aid clarity:

Step 1 – Identify and agree the valued receptors, spatial boundaries and timeframe that are to be included in the CIA.

- List here the environmental and social receptors that are likely to be impacted at a significant or important level by this development and others.
- Review the accuracy or reliability of the impacts from other EIAs and whether available monitoring data show whether the actual impacts have increased or decreased those predicted.
- Identify the CIA stakeholders. This will include but not be limited to each of the proponents for each of the developments, other NEOM interests such as Water Services, Energy Services etc.
- Establish the geographic boundaries for each of the valued receptors. This will help form the catchment area for the other developments. It is likely that the full suite of developments that will be included in the CIA will not all impact on each of the receptors.
- Identify the timeframe for the complete life-cycle of the proposed development. This will be used as a measure to identify the other developments and activities that also need to be included in the CIA.

Step 2 - Identify all known developments or activities that are under construction, pending approval or planned that meet at least one of the following criteria:

- Have overlapping areas of influence or impact on one or more aspect e.g. noise
- Have been estimated to impact one of the sensitive or priority receptors associated with the current development to a minor or greater degree
- Impacts on environments, communities or species habitats common to both developments or activities, to a moderate or greater level
- In addition, existing developments where the actual impacts on a receptor common to both developments or activities have been shown to be greater than predicted in the EIA.
- Transboundary developments (state or national) also need to be listed here if individuals of a receptor are known to travel across the boundary or between the sites, and are dependent on both sites for resources, mating or other critical aspects of their ecology. Of particular note are migratory shorebirds and waders which are known to frequent NEOM's shores but whose foraging and roosting grounds have been heavily impacted throughout their flyway. Habitat for migratory bird species are seen as some of the most sensitive of features in NEOM.

Note, that environmental or ecological enhancement programs such as re-greening, rewilding or removal of grazing pressures, will qualify as a planned activity and the predicted positive (and negative) outcomes must also be included in the CIA.

It may be useful to list the developments involved with the CIA in the following form:

Category	NEOM development, operations or activities	Non-NEOM development, operations or activities
Existing Developments		
Approved Future/Under Construction		
Notional Future		

Step 3 – assess whether the baseline data are adequate to provide robust CIA

- Information that needs to be reviewed in this section include:
  - Is the condition, population, resilience of the receptor well understood
  - Identify the most appropriate indicators of the condition of the receptor and review whether they are adequately understood across the entire geographic and temporal scales
  - Are further studies or surveys required to support the CIA or are the data already available elsewhere, e.g. academic knowledge bases.

Step 4 – Undertake assessment of the cumulative impacts on the valued receptors

- Summarise the potential environmental and social risks and impacts resulting from all the developments involved in the CIA. Include the positive changes from management or offsets.

- Estimate the combined changes in condition to each of the receptors throughout their ranges. Cumulative impacts must be quantitative wherever possible and may require additional studies of the receptor if the uncertainties are too great to enable rigorous assessment. Output from this considered iteratively feeds back to Step 3.
- Review whether the individual EIAs have missed any combined, additive or synergistic effects from other less-important or non-significant impacts, or whether new in-combination or cause and effect impacts need to be included.
- Summarise the cumulative risks and impacts from all developments combined including the positive measures associated with management, mitigation or offsets.

Step 5 – Estimate the significance of the predicted cumulative impacts

- List the relevant and appropriate thresholds, standards and indicators (IFC, KSA, NEOM and best practice) that will determine how significant the impacts are. Percentage population decline, water quality parameter threshold, etc.
- Identify whether the changes estimated in Step 4 are sustainable when set against the thresholds, standards and indicators, and whether the resource will remain viable.
- Summarise the key remaining cumulative impacts that need to be addressed further.
- Identify what the outcome would be if the development were not to proceed and, conversely, what the outcome would be if no management actions were not taken.

Step 6 – Establish management, mitigation and monitoring of the key cumulative impacts

- The control hierarchy is to be used to establish management and mitigation measures.
- Measures designed to manage or mitigate cumulative impacts to ALARP need to be identified and quantitatively shown to be able to meet the desired control.
- Where uncertainty exists, it must be declared and adaptive levels of management or monitoring agreed to proactively measure the actual changes.
- Triggers for further action may also be identified that would be detectable through monitoring programs.
- If measures may also pose hazards to environmental or social values, these also will need to be assessed.
- All relevant stakeholders will need to be actively involved at this level to agree the shared responsibility and apportion management, mitigation or monitoring.

NOTE: The importance of communication and collaboration between relevant stakeholders cannot be over-emphasized here. It is likely that workshops and ENVIDs will be required throughout this process, with clear participation from each stakeholder, proponent and NEOM Environmental Team.

- In extreme cases, where significant or important cumulative impacts cannot be managed or offset to an acceptable level, and the majority of the impacts were from the current development or activity, development approval may need to be withheld. In these cases, redesign, relocation or more substantive management measures may need to be employed before approval of the project can be issued.

ii. Net-benefit Analysis

The proponent is required to balance all negative and positive effects identified through CIA and assess whether the current development is compatible with NEOM's core values. While it is acknowledged that most constructed developments have a net negative environmental impact, the inclusion of NEOM's conservation initiatives into the CIA will permit the overall sustainability outcomes to be compared with NEOM's sustainability Goals, Aspirations and Commitments.

Where a development is shown to meet these, it will be permitted to proceed. If it doesn't meet the sustainability goals, aspirations or commitments, but may with small incremental changes, NEOM may approve the development but is at liberty to include further offset requirements, clauses or conditions. If however, a development is shown or can reasonably be expected to depart markedly from NEOM's core sustainability goals, aspirations or commitments, in the context of other current and future development and activities, it would not be permitted.

Wherever there are choices between actions that offset, manage, mitigate or monitor cumulative environmental perturbations or sustainable initiatives, net [environmental] benefit analysis (NEBA) can be used as a tool to compare and evaluate the likely outcomes against cost, effort or other gains or losses in helping to determine what measure may achieve ALARP. NEBA must be undertaken as a strategic tool prior to decision making and will help identify, cost and evaluate the effectiveness of the included measures. Measures such as monitoring, provision of environmental offsets, relocation of the development etc., can all be contained within NEBA. The effectiveness of an option and whether it will work will be dependent on how the potential risks are managed and implementation of the proposed mitigation measures.

NEBA will also need to include any negative impacts from the measures taken including emissions generated, and can be used to assess options within each of the measures included in the NEBA. Limitations and uncertainties (e.g. risks to achieving the desired outcomes) also need to be identified and included in evaluating the options.

NEBA may also be used as a contingency or response tool to help evaluate the options available in offsetting an unacceptable impact after monitoring has identified that permitted emission or effluent levels have been exceeded.

NEBA will be conducted here by listing the options (with a detailed description of each) against the desired outcomes, broad evaluation of the costs and efforts of each option, and identifying the uncertainties and risks that each option would pose to achieving the desired outcome. The aim of NEBA is to identify the negatives and positives of each approach and the feasibility of each. The conclusion of NEBA is to identify the feasible option with the least impactful expectation/predicted whilst still being practicable (e.g. ALARP). This can be presented most efficiently as a table although other methods of presentation can be considered.

- The NEBA toot can also be utilized as a response strategy to plan for and react during an environmental incident. Four key steps are considered when utilizing NEBA, namely:Compilation and evaluation of data – analysis of a wide range of data to evaluate and understand the area that would be potentially affected and to identify and priorities environmental and community aspects within it based on environmental sensitivities and social values.
- Predicting outcomes – undertaking planning scenarios based on alternatives to assess the potential effects on the environment based on a proposed development.
- Balance tradeoffs – the advantages and disadvantages of potential impacts are evaluated and weighed against the environment and social effects of each to understand and balance the tradeoffs.

- Selecting the best option – all data, information and risks assessed during the process are taken into account to select best option.

d. Key Findings and Conclusions

i. Key Findings

Should identify all significant risks that warrant further consideration either through design changes, engineering interventions, elimination, mitigation and management measures.

ii. Requirements for further Planning and Design

Summarise in table format changes needed to designs, plans, sustainability strategies for the current or future versions of the development plan

iii. Requirements for Construction

Summarise in table format the environmental and social performance targets or other actions such as specific management or action plans needed during construction

iv. Requirements for Operations

Summarise in table format the environmental and social performance targets, building/plot guidelines requirements or other actions such as specific management or action plans needed during operations

v. Conclusions

Summary statement providing overall conclusions of the ESIA process including recommendations, assuming the above key findings and recommendations are addressed.

e. Appendices for ESIA Report

Depending on the type of report (SEA/ESIA/ENVID) a number of supporting studies and reports should be attached to the document. The purpose of these studies are to demonstrate that sufficient baseline information has been collected to provide confidence in the reports. Appendices are grouped in terms of:

A. Baseline Condition Reports including but not limited to:
   I. Environmental Baseline
   II. Social Baseline
   III. Climate Change Vulnerability
B. Development Plans and Designs, which at a minimum should include
   I. Development Masterplan (Land Use Plan)
   II. Infrastructure Plan / Design
   III. Public Realm Plan / Design
C. Modelling & Technical Reports such as:

I. GHG / Air / Noise Emissions Modelling

II. Material Flow Model

III. Hydrology / Coastal Process Modelling

IV. Hydrodynamics / Marine Discharge Modelling

D. ENVID Workbook – which details the information provided in Section 10 of the Template.

The following sections provide brief guidance on the focus and content for identified appendices.

i. Appendix A.I - Environmental Baseline Report

The report should append Baseline Environmental Values report that summarizes the published and primary data used to describe physical, environmental and ecological values in the ESIA Report.

The objective of the Environmental Baseline Report is to identify and describe potential physical elements, conditions, species, communities, ecosystem functions and ecosystem services in the vicinity of the development that may be affected, adversely or positively, by the Proposal; and to adequately characterize these so that an appropriate and relevant risk assessment can be undertaken for the development.

The assessment should include primary collected data from the site as part of a Baseline survey. Typically Baseline Surveys will be undertaken by NEOM and a report and data sets capturing all relevant values issues to the Proponent as a primary data for the assessment. In some cases, Proponents may be required to conduct their own baseline survey for the whole or part of the development. In such case the baseline survey requirement to be agreed with NEOM Environment Department through the Scoping phase or prior.

5.8.1. Appendix A.II - Social Baseline Report

The Proponent shall include a Social Baseline Assessment to support the risk assessments undertaken for People, Places and Prosperity Values. This may also require Stakeholder Engagement, at least with internal NEOM Stakeholders, and possibly with existing communities.

The objective of the Social Baseline and Stakeholder engagement is to identify and describe potential social groups, communities, settlements or economic activities in the vicinity of the development that may be affected, adversely or positively, but the Proposal and to adequately characterize these so that an appropriate and relevant risk assessment can be undertaken for the development.

Potential negative risks to identified stakeholders may then require some form of stakeholder engagement to ensure stakeholder views are considered.

It is important to note that no community engagement should be undertaken without the express permission and involvement of the NEOM Government Affairs Department. The NEOM Environment Department shall facilitate any discussion with NEOM Government Affairs.

5.8.1. Appendix A.III – Climate Change Vulnerability Report

The Proponent is to undertake a Climate Change Vulnerability Assessment (CCVA) and report the results for attachment here. The CCVA will assess the vulnerability to climate change of each of the environmental values that are deemed sensitive to the proposed development. The CCVA may not be required for all projects and will be dependent on the level of the risks assessed and the nature of the developments undertaken.

The objective of CCVA is to estimate and include the potential sum total perturbations on environmental values and enable NEOM to establish robust and reliable management, mitigation and monitoring to assure deliverance of its Goals, Aspirations and Commitments identified in Section 4.1.

There are a few methods used for CCVA and a description of methods for wildlife is provided in the IUCN SSC Guidelines for Assessing Species' Vulnerability to Climate Change (Foden and Young [Eds], 2016). The general process and principles of assessment described in Foden and Young (2016) can be applied to non-wildlife environmental values such as environmental quality, ecosystem services, and social factors such as economics and commerce. For clarity NEOM recommends the definitions and terminology used in the CCVA is based on those provided in Foden and Young (2016).

Key aspects of climate change induced responses that need to be focused on include for example:

- Constriction in range of a sensitive species, community, ecosystem or social factors through:
  - Reduction in ecosystem habitat availability e.g. mangroves
  - Decreased area in which favourable climatic conditions exist
- Population changes due to constriction in habitat availability or unfavourable conditions
- Biological changes such as temperature induced behaviours, germination,
- Expansion in range of invasive or common species, or potential occurrence or spread of pathogenics
- Extinction potential either directly due to unfavourable conditions or indirectly through loss of habitat.

While it is acknowledged that development and activities in NEOM cannot control or alter climate change in isolation, the results of the CCVA will be used to estimate the impacts on each of the vulnerable values in combination with the impacts from the said development, about which the Proponent has control over. In turn the residual impacts on each of the environmental values will then be addressed cumulatively with other developments and activities. The CIA will be used to establish whether the environmental and sustainability aspirations of NEOM can be achieved in light of the development proceeding in a changing climate.

5.8.1. Appendix B.I – Masterplan / Land Use Plan

Provide all masterplan layouts and/or land use plans with accompanying schedules and narratives that are necessary to contextualize the risk assessment.

5.8.2. Appendix B.II – Infrastructure Plan / Design

Provide all Infrastructure plans and designs with accompanying schedules and narratives that are necessary to contextualize the risk assessment

5.8.3. Appendix B.III – Public Realm Plan / Designs

Provide all public realm plans and designs with accompanying schedules and narratives that are necessary to contextualize the risk assessment and inform the development of the CESMP.

5.8.4. Appendix C – Modelling and Technical Assessment Reports

Provide all modelling and supporting study reports required to support the conclusions and recommendations in the risk assessment and to inform CESMP and/or monitoring programs as noted in Section 5.12 above.

5.8.5. Appendix D – ENVID Workbook

Attach the ENVID workbook, and provide a digital copy for input into the NEOM master risk register.

f. References

International Finance Corporation (2012). *IFC Performance Standards*
NEOM-NEV-PRC-016: Procedure for Regenerative Developments

NEOM-NEV-EMR-402: Employer Requirements for Regenerative Developments in Environmental Services.

NEOM-NEV-PRC-601: Procedure for Environmental and Social Risk and Opportunities Assessment.

The World Bank Group . Environmental, Health and Safety Guidelines

The United Nations Sustainable Development Goals – www.sdgs.un.org/goals

Appendix A – Environmental & Social Assessment Report Template

NEOM-NEV-TGD_002_TEM-001