Arab Republic of Egypt
Cabinet of Minister
Ministry of State for Environmental Affairs
Egyptian Environmental Affairs Agency (EEAA)
Environmental Management Sector

Environmental Impact Assessment

GUIDELINES FOR ASSESSMENT OF URBAN DEVELOPMENT

April 2001

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1 INTRODUCTION

Law No.4 of 1994 on the Environment and the Executive Regulations issued by Decree No.338 of 1995 states that new establishments or projects as well as expansions of existing establishments must be subject to an "Environmental Impact Assessment" (EIA) before a permit is issued. For Urban Development projects, an EIA may be needed for:

- The change in the existing use of an establishment within the urban area and the introduction of new activities
- The new cities established outside the existing urban boundaries.
- Tourist zones in areas of special nature.
- Extensions of existing areas

The EIA report should be submitted via the Competent Administrative Authority to the Egyptian Environmental Affairs Agency (EEAA). The EEAA will review the study and prepare an opinion indicating if the project can be approved.

These guidelines identify the main factors to be considered when preparing EIA for urban development projects, yet do not cover every aspect, however they deal with the environmental issues which usually arise with urban development.

In using these guidelines, it is essential that reference is also made to all relevant laws, notably Law 4/1994 for the Environment, to other relevant EEAA Environmental Guidelines (particularly urban development and roads and highways), and to the EEAA Guidelines for Egyptian Environmental Impact Assessment. At the start of planning for a development, developers should be fully aware of their obligations under all laws and guidelines applicable to their proposals.

2 THE EIA PROCESS:

2.1 WHAT IS ENVIRONMENTAL IMPACT ASSESSMENT

The EIA process is not simply a matter of preparing an environmental impact assessment report and obtaining the necessary approval. EIA, in its widest sense, is the means by which environmental concerns can be taken into account throughout the life of a development project, starting from the initial concept through the detailed design, construction and operation to the eventual restoration and reuse of the land.

The EIA is not a scientific research by itself, but it depends on the results of the scientific research and the basics of the decision making process.
For this reason, this process should not be considered as a complementary action or a red tape annex for the project, but it should be taken as an essential factor for the establishment of the project and considered in the funding of the project from the very beginning.

The EIA is not only a professional support for the project evaluation, but it is also considered as a tool for the management of the development process, thus, the environmental assessment process requires the ability of the contributors to judge the scientific and management performance .

- An effective EIA requires the following:

- An accurate description of the project discussing the alternatives for the implementation method.
- Identifying the range and type of required data
- Identification of potential environmental impacts at the different stages of the project.
- Presenting the data in an effective and gradual manner, to suit each stage of the decision making process.
- Selection of a competent team with regards to technical and management skills, to perform the EIA.

It is important, when collecting data, to concentrate on the main issues related to the project; that means surveys should be designed to ensure the objectivity of the data collected. If samples need to be taken for the long term, such as air, water or soil samples, this should begin as early as possible in order to have the longest possible period to assess potential trends.
Revisions of the sufficiency of the gathered data should be done throughout the preparation of the study to fill in the gaps promptly.

The following table shows the required groups to make the report:

Scope of work	T a s k s
1. Environmental Monitoring	• Taking samples of air and water Quality. • Updating of land use. • Monitoring of the run off water
2. Plan Review	• Zoning • Layout review • Service plan review
3. Environmental Assessment	• Preparation of the report • Prediction of alternative impacts • Evaluation of the plan • Hazards evaluation
4. Facility Planning	• Planning of water treatment • Planning of water supply • Planning of highways
5. Land Use Planning	• Environmental inventory • Site selection & evaluation • Land use and capacity studies
6. Development Planning	• Constraints & Potentialities • Site planning and design • Feasibility studies
7. Waste Disposal Planning	• Solid wastes • Site treatment and rehabilitation • Evaluation of impacts
8. Public Health Planning	• Monitoring and controlling of diseases • Monitoring of water quality • Environmental analysis
9. Energy Planning	• Evaluation of energy alternatives • Analysis of energy budget and deduction of new solutions

Scope of work	T a s k s
10. Environmental Design	• Streetscape • Planning of riversides • Studies of microclimate
11. Park and Recreation Planning	• Site selection & evaluation • Identification and evaluation of impacts • Landscape design
12. Landscape Management	• Control of run off water • Control of evaporation and sedimentation • Dealing with flatlands.
Environmental Information Services	• Legislative consultants. • Scientific materials • Workshops of concerned groups

The Steps in the EIA process are broadly as follows:

2.2 DESCRIPTION OF THE PROJECT:

The definition of the project from the point of view of the location and characteristics has a great effect on assessing the change of land uses, infrastructure and different activities. The description as well as the visual changes in the landscape should contain:

1. The Authorities concerned with the project and its management.
2. The location of the project.
3. The general layout, land use plan of the site, roads and structures
4. Any relation of the site with the surrounding economic activities such as agriculture and industry.
5. The different stages of the project during its lifetime and the duration of each.
6. The construction and operation stages and the accompanying activities such as the dredging, landfilling and transportation of the equipment and the workers
7. The rehabilitation of the site area after the project is completed

2.3 DESCRIPTION OF THE ENVIRONMENTAL BACKGROUND AND IDENTIFICATION OF IMPACTS:

In this stage, the present and future environmental situations are described according to each of the proposed alternatives including the no project alternative. Also, taking into consideration the changes that occur as a result of natural events or human activities in the region.
The relationships between the environmental situations and the different alternatives could be identified through different tools. The simplest of which is the use of matrices identifying the main activities and the main environmental impacts resulting from urban projects, where other elements and activities could be added according to the type of the planned urban agglomeration.

To prepare an accurate description of the environmental backgrounds identifying the main impacts, it is essential to implement the following:

1. Study the type of impacts resulting from similar projects which helps in making a list of the factors that need to be studied
2. Use other sources of information, such as EIAs, for similar projects.

The model below presents a checklist for the environmental impacts of the urban development to be examined. Yet it could change according to the conditions of each project.

Landtake for the development. Change of land use. Natural disasters such as cracks, floods, and hurricanes. Impact on site characteristics, during and after construction works Economic impacts during both construction and operation. Social impacts during both construction and operations. Solid waste disposal. Sewage system and volume of liquid wastes. Danger of mines in some areas. Private and public traffic on the way to the site. Air and water pollution during both construction and operation of the urban settlement. Impacts on the infrastructure such as electricity and sewage

Checklist of Environmental Impacts for Urban Development

2.4 CONSIDERING ALTERNATIVES:

Early appraisal of alternatives is essential; this helps the decision-makers to recognize different approaches to solution and to evaluate the project.

These alternatives would be:

1. No project, this could be relative to the need of the project.
2. Alternative locations for the project to obtain maximum profit from the economical, planning and environmental points of views.
3. Different scales for the project and the flexibility of its size.
4. Different alternatives for land use to reach the ultimate environmental performance.
5. Different alternatives for the construction process: day or night to avoid noises i.e. suitable time for work with minimum impact.

In considering and evaluating alternatives, cost should be taken as an essential factor, preferring those alternatives with minimum impact, which minimize the costs of mitigation and management.

It is also to be mentioned that the selection of alternative will be based on the economical sustainability, planning and environmental criteria.

2.5 SCREENING

This is the task of deciding whether or not a formal EIA is required for a particular project.

Relevant legislation and guidelines (Law 4/1994 on the Environment and the EEAA guidelines on Egyptian Environmental Impact Assessment) identify the projects which must have an EIA and those where an EIA is discretionary or not required.

The EEAA Guidelines classify projects into three groups to reflect the potential severity of environmental impacts:

- White list projects: those likely to have minor environmental impact. The developer applies to the CAA before construction works are initiated, with a letter of intent, accompanied by Environmental Screening Form "A". An EIA is not required for these projects.

- Grey list project: Those, which may result in significant environmental impact. The developer applies to the CAA before construction works are initialed, with a letter of intent accompanied by Environmental Screening Form "B". A scoped EIA for such projects or for parts of such projects may be required at the discretion of the EEAA.

- Black list projects: Those projects, which require complete EIA due to their potential impacts. The developer applies to the CAA before construction works are initiated, with a letter of intent, accompanied by the scoped EIA. The EEAA Guidelines include in Annex 1 sectoral guidelines for establishments that need full EIA.

The urban projects are categorized according to their size and activities. Further details regarding the procedures are given in the EEAA Guidelines.

2.6 SCOPING:

Scoping is the identification of those matters that need to be covered in the EIA. Not all issues will be equally important for all proposals and the EIA process must focus its attention on the key issues of concern.

Scoping should result in:

- A list of all issues with a preliminary estimate of the relative significance of their impacts
- Identification and prioritization of the key issues and how they are to be assessed.
- An explanation as to why other issues are considered to be less important.

2.7 Prediction of Impacts and Evaluation of Mitigation Strategies:

This point deals with the prediction of the nature and extent of the impacts on the environment, as a result of the project, compared to the original environmental situation. It also discusses the effectiveness of the mitigation strategies.

The changes due to urban development areas are:

1. Changes in population size, site layout, surrounding environment, and historical and cultural zones.
2. Impact of the development on the flora and fauna, such as damage or the total loss of a plant or animal species.
3. Impact of the development of land including topography, soil, and land use
4. Impact of the development on water (quality, quantity and level), whether surface or groundwater.
5. Impacts on air and climate (changes in temperature, humidity, concentration of suspended particles in air, smells, noise,…etc)
6. The indirect impacts such as traffic flow and means of transportation, the impact on another development activity

parallel to the project, or the impact on the economic base and the work market in the surrounding area…etc.

Impact prediction should consider:

- The scale of the impact
- The duration of the impact
- How widely spread the impact is spread.
- Whether impacts are direct or indirect
- Both beneficial and adverse effects
- Whether impacts are temporary, reversible or permanent.
- Public interest and political echo of the impact.

The accuracy of the predictions depends on the available sources of the database.

After screening the environmental impacts, a number of mitigation measures could be identified at three levels:

1. To avoid the expected side effects before they are here
2. To minimize their impact.
3. To mitigate the effects that could not be avoided

3 GUIDELINES FOR WRITING THE EIA REPORT:

These guidelines provide advice on the content of formal EIAs for developers, planners and consultants involved in urban development.

The guidelines are not exhaustive. They are intended to identify the main issues of concern related to the urban development. Developers must carefully assess each individual proposal to ensure that all issues relevant to the site have been identified.

The main text of the EIA report should be around 60-70 pages, and certainly no longer than 100 pages in addition to the schematic and planning drawings. For more technically complex projects, technical appendices can be used to achieve this. Any individual technical appendix should be no longer than 20 pages (excluding plans, photos, and drawings).

The following list sets out the key chapters that are required in an EIA for urban development.

a. Non-Technical executive summary.
b. Description of the proposed urban development.
c. Background Information covering the legislative framework, methodology, consulting of public sentiment and consideration of alternatives.
d. Description of the existing environment - the baseline.
e. Prediction of impacts and evaluation of significant environmental effects.
f. Mitigation including the environmental management plan and monitoring.
g. Conclusions.
h. References.

3.1 NON-TECHNICAL EXECUTIVE SUMMARY

The non-technical summary should be in around 4 pages, and not exceed 10 pages in addition to plans and photos.

The summary should give an overview of the proposal, the alternatives considered, the potential environmental impacts and their effects, and proposed mitigation measures. It should be written in non-technical language to help all readers to understand it.

3.2 DESCRIPTION OF THE PROPOSED URBAN DEVELOPMENT

3.2.1 Objectives and Scope of the Proposal

There should be a clear statement of the objectives and scope of the proposal including:

- A general description of the proposed built development or the land uses expected
- The reason and / or need for the development;
- The expected project life;
- Land ownership/tenure;
- Any designations such as protected areas, which affect the site.

3.2.2 The location

A site description and maps, plans or photographs should be provided clearly identifying the location of the proposed development relative to:

- Land uses in the surrounding area, both urban and rural, e.g., housing agriculture;
- Water bodies and surface water, e.g., rivers, lakes and canals and the use made of these, e.g. fishing, drinking water supply, navigation, irrigation;
- Habitats both natural and man-made for flora and fauna;
- Infrastructure including transport and utilities
- Any local or regional strategy such as management plans for nature conservation areas (natural protectorates)
- Any historical sites or environmental. protectorates

3.2.3 Detailed Description and layout of the proposed urban development

The following information should be provided:

- Site plans which must show the maximum land area affected by the proposal;
- Layout plan of the development showing buildings, roads, parking, and infrastructure including all utilities;
- Elevations, cross sections and plans of all built development supported by photographs or similar methods to show the visual appearance proposed;
- A description of the extent and type of urban development proposed including a description of the uses proposed.
- Power supply requirements and proposed energy conservation measures;
- Proposed usage and sources of water supply including discharges from any desalination plants and options for water recycling and reuse;
- Quantities of solid and liquid waste generated and the arrangements for collection, recycling treatment and disposal;
- Road system and pedestrian walkways.
- Identification of the proposed means of surface water drainage(e.g. rain, etc…)
- The anticipated employment in operation.

3.2.4 Site Preparation and Construction

Describe the construction works required prior to commencement of project operation including:

- Timing, staging and hours of construction work;

- Proposed construction methods including temporary construction works, the equipment to be used and methods of transport of the equipment and workers to the site;
- Proposals for environmental management during construction, e.g. erosion and sediment control system, waste water holding tanks, noise mitigation strategies;
- Any stabilisation structures or earthworks including the dredging, reclamation, excavation or landfilling associated with these;
- Quantities of material to be moved to or from the site, the method of disposal of excess material, and the sources of material to be brought to site;
- Details of the construction workforce , including source, expected numbers and fluctuations throughout the construction period;
- Accommodation of the working team.

3.2.5 Existing Development in the Locality

Outline:

- The nature of any past or existing urban or other development on the proposed site
- Past environmental performance, including the impacts of existing development on the environment and the effectiveness of any impact mitigation which applied on the site
- The relationship of the proposed development to any existing development in the neighborhood.

3.3 BACKGROUND INFORMATION

3.3.1 Legislative Framework

This section should set out the laws considered during the planning of the project, e.g. Law No. 4/1994 on the Environment and its executive regulations, Governorate orders, land use, etc. A list of all approvals and licenses required, under any legislation, should be included. This list should identify the relevant authorities involved in the assessment and regulation of all aspects of the proposal.

3.3.2 Methodology

The procedures or methodology used in the EIA should be outlined. The basic methodology of EIA is to:

- Establish the baseline or existing situation and any changes anticipated without the development concerned
- Predict the impacts that will occur with the development
- Evaluate the effects of those impacts for people, flora and fauna and for things i.e. environmental resources such as land, water and the atmosphere
- Evaluate how mitigation can be used to reduce the effects of a development
- Describe the residual effects after mitigation.
- This chapter should include details of:
- How the impacts have been predicated
- The criteria used for assessing the significance of effects for both people and environmental resources.

- This should be supported where necessary with:
- Relevant guidelines issued by government authorities, provisions of any relevant environmental protection legislation, and relevant strategic plans or policies
- Relevant research or reference material, meteorological data and relevant preliminary or pre-feasibility studies.
- Those issues, which will not need a full analysis in the EIA but which still, need to be addressed in a limited way.

The outcome of the screening and scooping process should be summarised including:

- All issues identified;
- The key issues, which will need a full analysis in the EIA but which still, need to be addressed in a limited way.

3.3.3 Public Participation:

The EIA should list who has been consulted, how they have been consulted and what their views are. Consultants should include relevant government agencies, NGOs and the public. A brief description of the reason for consultation and the outcome should be included.

For urban development, agencies that must be consulted are those with regulatory powers or responsibilities in relation to planning the control on roads and traffic, waste disposal, discharge limits into fresh waters, emissions to air, and historic monuments, and conservation of natural resources. These will include, as a minimum, the Egyptian Environmental Affairs Agency (EEAA), Governorate representative, Ministry of Housing, Ministry of transport, Ministry of Health, and relevant Community Development Associations (CDAs).

3.3.4 Consideration of Alternatives

The EIA should include a summary of alternatives to the development and the reasons why the proposed development is preferred. Alternatives will include:

- The " no development" alternatives
- Alternative locations
- Alternative uses for the land. Project elements may be modified through mitigation
- Alternative management or operational practices, these may be modified further under mitigation.

3.4 DESCRIPTION OF THE EXISTING ENVIRONMENT: THE BASELINE

3.4.1 Overview

An overview of the existing environment should be provided in order to place the proposal in its local and regional context. More detailed baseline information is needed for those issues identified as potentially important in the EIA for urban development proposals and this is likely to include:

- Land Characteristics and Use
- Landscape characteristics of the surrounding area and Existing Views
- Habitats, Flora and Fauna

- Water including Hydrology, Groundwater and Water Quality
- Air Quality
- Noise Levels
- Antiquities and other Sites of Historic and Cultural Significance
- The Social and Economic Context
- Traffic flows and Transport Infrastructure
- Utility Services.

Data must be relevant to the proposed development. The level of detail should match the level of importance of the issue in decision-making. To make the EIA report easier to read, it may be sensible to include the specialized detail for each of the report sections as a technical appendix to the report, with a summary of each section in the main EIA report.

3.4.2 Land Characteristics and Use

All urban development involves taking land. The baseline include:

- The existing surface characteristics are topography, solid characteristics, terrain stability and susceptibility to erosion or landslip
- The existing land uses occupying the site
- The existing surface characteristics of the surrounding area
- The existing land uses occupying the surrounding area and particularly those land uses which would be sensitive to urban development (industry, protectorates, etc…).

Note that the land characteristics and uses will also be relevant to other parts of the baseline, e.g. landscape and visual character.

3.4.3 Landscape Character and Existing Views

Landscape quality can be affected by intrusion of urban development and by loss of attractive features such as vegetation and hills. The baseline needs to describe:

- The existing character of the landscape both on the site and in the surrounding area
- Views of the site from adjoining properties and public areas particularly where these are sensitive, e.g. residential, recreational or tourist areas, especially if the project contain industries.

3.4.4 Flora and Fauna

Flora and Fauna can be affected by emissions from existing industries if and by loss of habitats such as vegetation and water bodies. The baseline needs to describe:

- The existing habitats – terrestrial, aquatic or marine – both on site and in the surrounding area.
- The flora and fauna species present, their populations and their value, which may reflect rarity, economic value and attractiveness.

3.4.5 Water including Hydrology, Groundwater and Water Quality

Urban development may impact on the hydrology of an area and waterborne emissions may place the quality of both surface water and groundwater at risk. There is a need to understand the surface water drainage in the area even if this is very intermittent, e.g. flash floods every 50 years. Baseline data includes:

- Existing drainage. This includes the location and capacity of wadis, canals, drains and rivers; identification of areas prone to flash foods; depth of groundwater surface level.
- Surface water and groundwater movement patterns. This includes groundwater hydrology, the range of water levels and daily flushing regime in canals, drains and rivers; tidal ranges and wave climate in coastal areas and sediment transport processes.
- The quality of groundwater concerning its possible use.

3.4.6 Air Quality

Baseline conditions include:

- Meteorological data particularly prevailing wind direction and strength for each Season.
- Existing air quality, particularly dust loading, and existing sources of air emissions in the area.

Existing air quality cannot be determined with any precision without sampling over an extended period. This is rarely practical and a descriptive approach based on prevailing weather conditions and identification of the main local emission sources affecting air quality, e.g. road traffic, major heavy industries with stacks, is often a better approach. The most appropriate approach to atmospheric impacts is generally to prevent them at source.

3.4.7 Noise Levels

Noise levels are relatively easy to establish and this is best undertaken at the nearest sensitive receptor location, e.g. residential areas or schools. If noise-measuring equipment is available noise can be monitored over a number of 15minute periods during a typical working day. Ideally, 4 or 5 periods should be monitored at each sensitive receptor location. This will establish the background noise levels and the extent to which these are exceeded during the period monitored. Where noise-monitoring equipment is not available a descriptive approach identifying the main sources of existing noise and the extent to which these cause nuisance may be adequate.

3.4.8 Antiquities and Other Sites of Historical and Cultural Importance

Existing sites may be directly disturbed by urban development. Furthermore the accumulation of ground water, the emission due to traffic may have adverse effects on the setting of antiquities. The baseline will need to:

- Identify any items of historical or cultural significance (both above and below water) on or in the area surrounding the site.
- Indicate the vulnerability of these to impacts from urban development
- Describe the use made of these site, e.g. site frequented by tourists.
- The surface level of the historical sites relative to that of the project enabling the study of the impact of ground water.

3.4.9 Social and Economic Context

Urban development will generally impact on the local economy and may result in social change in areas according to their economic base. The baseline includes:

- A general description of the economic situation. This

includes: Employment levels, wage levels, existing industries in the local area, and other proposed developments.

- The general social context including educational levels in the local population, participation in formal economic activities - particularly by women- and local cultural values.

3.4.10 Existing Transport Infrastructure and Traffic Flows

Traffic is almost always an issue for urban development. The baseline includes:

- Existing transport infrastructure including roads, railways, ports and canals.
- Existing traffic flows on that infrastructure and anticipated changes which would take place even if the development did not proceed.

3.4.11 Existing Utilities Infrastructure and Usage:

Urban development will usually place demands on existing utility infrastructure notably water supply, sewerage and waste water treatment, and electricity. The baseline includes:

- Existing utilities infrastructure.
- Existing demands on utilities infrastructure.

3.5 PREDICTION OF IMPACTS AND EVALUATION OF SIGNIFICANT ENVIRONEMTAL EFFECTS:

3.5.1 Basic Methodology

This chapter should include a discussion of impacts both:

- During construction of any built or engineered environment,
- In operation

Examples of potential impacts of urban developments and their significant effects include:

- Landuse leading to the loss of ecological habitats with negative effects on flora and fauna populations
- Construction works which directly damage the existing landform and add to the impacts by land take
- Dust generated during construction or operation which may affect human, plant and animal growth
- Gaseous emissions to air either from vehicles or industrial areas – if exist- resulting in negative effects on the health of the local population
- Disposal of solid waste, when, inefficient leads to its accumulation affecting therefore the comfort and general health conditions.
- The surface and underground water pollution resulting from the discharge of effluent and untreated water.
- Noise, resulting from traffic or power plants, which may disturb people in their homes, schools or other place of sensitive uses.
- The need for private and public transportation, its effect on traffic as well as road accidents and traffic noise.
- Power supply and its effect on the surrounding milieu.

- Economic impacts during construction, which may create opportunities and activate local business sector.
- Economic impacts during operation and which may create long term benefits, such as the creation of job and opportunities and the activation of the business sector which have positive effects on the economic welfare of the local population.
- The provision of proper services and infrastructure with wider benefits to those living and working in the local area.
- Impacts on existing utility infrastructure and possible benefits as a result of an improved infrastructure.

There is a need to distinguish between impacts, which are:

- Positive or negative
- Reversible or irreversible
- Temporary or permanent
- Short term or long term
- Direct or indirect

In assessing environmental impacts and the significance of their effects:

- Which elements affect and which are affected
- How the elements are affected.
- These effects must be evaluated against a set of consistent assessment criteria.

Criteria for evaluating the significance of impacts and their effects should be set in advance. They should be based on local standards wherever possible. Where these are not available, acceptable international standards should be used (e.g. WHO, USEPA, etc. guidelines). In all cases of choice of the appropriate standard must be robust, defensible and relevant to the local situation. If no suitable existing standard is available, then the criteria developed and used must be clearly explained in the EIA.

The use of matrices can be very helpful in co-ordination and summarizing information for this section of the EIA report.

In this part of the report impacts should be considered before or without mitigation, except where the mitigation concerned is an integral part of the design and operation of the development.

3.5.2 Landtake:

Urban development always involves the development of land. Landtake may result in the partial or complete loss of:

- Ecological habitats with negative effects on flora and fauna populations
- Attractive landscape with negative effects on landscape character and the views enjoyed by people
- Antiquities and sites of historical and cultural interest
- Land in other uses, e.g. agricultural land or community facilities, with resulting impacts on peoples livelihoods or social life.

Note that even where land is taken for urban development careful design can reduce impacts by retaining residual areas in their natural or existing state.
Landtake is normally evaluated on the basis of the area of land lost and the suitability of that land for other uses, e.g. agriculture, recreation or others.

3.5.3 Construction Works:

The impacts of construction works are generally identified on the basis of damage to existing environmental resources and the value of those resources.

These impacts are notified in two stages:

First, during the construction some impacts may occur such as:

- Direct damage to the existing landscape in addition to landfill and construction
- Construction waste accumulated at the site.
- Ground water resulting from the drilling actions and the methods of disposal
- Dust resulting from operating the construction work.
- Noise resulting from operating the construction equipment.
- Traffic pressure on roads due to the transportation of materials and equipment.
- The effects on the neighboring structure – if existing - due to vibrations.

Second during the operation: The main features of the site are affected as follows:

- The geological and physical features of land by inducing of new structures.
- Visual effects resulting from the change of the natural view from the surrounding areas.
- Surface water features – if existing.
- Existing vegetation.
- Traffic pressure on roads.
- Sewage disposal and its impact on the groundwater.

3.5.4 Economic Impacts during Construction:

All new urban developments will involve some expenditure on construction. Where local contractors undertake this work there is an obvious benefit to the local economy, this is likely to be strengthened where the contractor makes purchases from other local businesses. In some cases contractors from outside the local area may win the construction contracts; while the benefit may be less, employment of local labor and purchases from local businesses will still benefit the local economy.

Estimates of benefits to the local economy can be based on an estimate of the number of local people employed during construction, the average duration of employment and the average rate of pay. Benefits to local businesses can be based on an estimate of the proportion of construction spending which is spent in the local economy.

3.5.5 Economic Impacts During Operation:

In operation urban development generally result in:

- Benefits improvement of the economical activities in the area due to the migration of new population to the area.
- Created job opportunities their types and their effects on local activities.

Estimating the negative impacts on existing business is more difficult. The presence of a number of similar businesses is of ten beneficial for a local area because it gains a reputation concerning this activity.

3.5.6 Dust :

Dust may be generated during construction of urban development. During construction dust most often

arises from vehicle movements on unsealed roads and from earthmoving operation using construction plant such as excavators.
Dust can also occur as a result of winds or storms or neighboring industries such as cement or marble.
Existing dust levels in Egypt are strongly affected by weather and particularly the strength of winds from the desert areas to the east and west of the Nile Valley.

The accurate prediction of dust impacts is very difficult given the changing natural dust levels; an appropriate way of dealing with this subject is:

- To identify the main sources of dust attributable to the development and the scale on which dust may arise;
- To identify the people or resources that may be affected by this dust and the level of any nuisance caused; and
- To consider what measures should be taken to reduce dust from sources associated with the development to an acceptable level.

This approach is effectively based on reducing any emissions to the level, which will not cause nuisance, rather than attempting to predict impacts with precision.

3.5.7 Gaseous emissions to air:

In urban settlements gaseous emissions are mainly generated from vehicles and any other emissions from neighboring industrial areas.

Existing air quality in Egypt is strongly affected by weather and particularly the strength of the winds from the desert areas to the east and west of the Nile Valley. At times the level of naturally occurring dust in such that gaseous emissions are likely to be masked by the dust loading.
The accurate prediction of air quality impacts is very difficult given the changing natural dust levels; an appropriate way of dealing with this subject is:

- To identify the main sources of gaseous emission attributable to the development, the scale on which this may arise; the likely presence of harmful gases and the worst case concentrations likely to arise in the atmosphere given the dispersion characteristics of the site;
- To identify the people or resources that may be affected by these emissions and the level of any nuisance caused.

As with dust, this approach is effectively based on reducing any emissions to a level, which will not cause nuisance, rather than attempting to predict impacts with precision.

3.5.8 Discharge to Water:

Emission to surface water and groundwater may be generated both during construction and in the operation. Waterborne effluent may reduce water quality with impacts on:

- Human health particularly where water is used for irrigation or public water supply.
- Freshwater and marine flora and fauna.

Water quality impacts are easier to predict than air quality impacts. Existing water quality can be measured using a number of criteria such as the biological oxygen demand (BOD) level.

Predictions of changes in water quality can be based on:

- Anticipated effluent discharges including volume, the

concentration of suspended solids, concentration of harmful substances, etc…

- Baseline data for the recipient water resources both surface and underground.

The criteria for judging the significance of impacts will include the people or resources that may be affected by changes in water quality.
An alternative approach can be taken, based on improving effluent quality and reducing effluent volumes to levels, which will not result in a significant impact on the water resources concerned.

3.5.9 Waste Disposal

Disposal of waste can potentially have adverse effects on amenity, water quality, on crops and peoples' health.
Issues to consider include:

- The existing condition of any water body or groundwater that may be changed as a result of waste disposal both during construction and in operation.
- Potential liquid and solid wastes to consider include:
  -Run-off from consolidated areas such as fuel storage facilities, roads and parking areas.
  -Waste disposal (litter or solid waste),
  -Littering and garbage disposal.

3.5.10 Noise

The potential sources of noise associated with an urban development need to be identified; these are likely to include:

- Construction noise (e.g. blasting, pile driving compressors, etc.);
- Operation noise (e.g. vehicle movements).

An assessment will need to be made of:

- Baseline conditions (including relevant meteorological and topographical factors)
- Proposed working hours during construction and operation
- Where these impacts will be most important (e.g. residential or sensitive natural areas).

3.5.11 Traffic

A traffic study may be required where vehicle movements, on street parking, boat navigation, train movements, etc., may significantly affect the community. Issues to consider include:

- Assessing the impact of traffic generated during construction and operation on the local and regional transport network; issues to consider include:
  -Vehicle, train or boat size and types,
  -Frequency of movements at various times of day and year (including the need for restrictions at night or peak periods),
  -Safety issues.
- Estimating the average and peak parking demand including the adequacy of on-site facilities during construction and operation.

3.5.12 Services and Infrastructure

The provision of proper services and infrastructure for urban development may have wider benefits for those living and working in the local area. However the reverse can be true where urban development takes place without adequate investment in services and

infrastructure may become overloaded and the local community may be adversely affected.

In general the impact on services and infrastructure is likely to be fairly neutral; a significant benefit is only likely to occur where the development enables a major improvement to local infrastructure e.g. roads, etc..
These impacts are generally dealt with by:

- Describing the anticipated changes in services and infrastructure provision,
- Setting out how those changes may benefit or harm the local community.

3.5.13 Risk Assessment:

Considering urban settlements, hazards can be assessed by:

- Floods pathways which have to be identified and treated either by changing of direction or simply avoiding .
- Windy and Dusty storms and the protection of the settlements through planning and plant barriers.
- In cases of existing neighboring industrial areas, it is essential to identify the possible hazards affecting the population and the resources and how to prevent them.

3.6 MITIGATION

3.6.1 Mitigation Strategy

This section considers the mitigation strategy, including the consideration of alternative options, and the extent to which this will avoid or reduce significant effect. The evaluation of the strategy will take into account its:

- Sustainability
- Integration
- Feasibility
- Compliance with statutory obligations under other licenses or approvals.

The mitigation strategy should outline the environmental management principles to be followed in the planning, design, establishment and operation of the proposed development. It should include specific location, layout, design or technology features, and an outline of ongoing management and monitoring plans.

3.6.2 Specific Mitigation Measures

These include proposed mitigation and management measures to control impacts on:

- Land quality-measures include:
  - Stabilization works for digging, embankments and open canals
  - Erosion and sedimentation control structures.
  - Landscaping and re-vegetation proposals.
  - Control and disposal of solid waste.
- Water quality – measures include:
  - Treatment of liquid effluent and re-use in irrigation.
  - Sewage system with no impacts on ground water.
- Air quality – measures include:
  - Plant barriers against gaseous emissions.
  - Control in fuel inputs in case of existing industry.
- Noise, where measures include:

- Segregation of heavy traffic.
- Sound attenuation measures such as walls and banks.

• Habitats, Flora and Fauna – measures include:

- Compensatory planting or restocking of indigenous species.
- Provision of new appropriate habitat.
- Opportunities for colonization.

• Historical and Cultural Features – measures proposed should mitigate impacts and conserve antiquities and areas of historical or heritage significance during all stages of the development.

All measures must be compatible with the provisions of all-relevant acts and laws.

3.6.3 Environmental Management Plan

An environmental management plan (EMP) is a document designed to ensure that the commitments in the EIA and subsequent conditions of any approval or license are fully implemented. The EMP should demonstrate that sound environmental practices will be followed during the establishment, operation, rehabilitation and after use of the development. It should cover the following:

- Management of construction impacts (e.g. landscape management plants).
- Management of operational impacts (e.g. buildings, infrastructure, transport and parking management maintenance and site security plans, emergency and contingency plans).
- Strategies and action plans to feed information from monitoring into management practices.
- Public awareness and training programs for operation staff.
- Indicators of compliance with licensing and approval requirements.

An EMP should include a Monitoring Plan that should be carefully designed and related to the predictions made in the EIA and the key environmental indicators. The EMP should outline the need for monitoring its duration and reporting procedures.
Parameters, which may be relevant, include:

- Performance indicators in relation to critical operational issues including:
  -Physical characteristics of the site
  -Water quality whether fresh or marine
  -Shoreline morphology and sediment budget
  -Soils and sediments
  -Noise and air quality
  -Public health indicators
  -Land surface and hydrology
  -Flora and fauna
- Waste management performance indicators in relation to recycling and reuse;
- Monitoring of received complaints.

Monitoring procedures should cover the following:

- The key information that will be monitored, its criteria and the reasons for monitoring
- The monitoring locations, intervals and duration
- Actions to be undertaken if the monitoring indicates a non-compliance or abnormality

- Internal reporting and links to management practices and action plans
- Reporting to relevant authorities and, if appropriate, to the consent authority or the community.

3-7 CONCLUSIONS

This should summarize the prediction and evaluation of impacts, proposed mitigation and alternative processes, and residual effects after mitigation. It will emphasis:

- The more important impacts
- Who or what these will affect
- How significant the effect will be
- Whether mitigation is possible
- The likely success of mitigation measures adopted or recommended alleviating those impacts.

This information can be presented either as text, or as summary tables if desired.

After mitigation measures have been assessed, residual and/or cumulative effects may remain. It is useful to set these out in a table in which the level of significance of each effect is given.

3-8 REFERENCES

A list of all references should be attached to the report.