

ENVIRONMENTAL HEALTH IMPACT ASSESSMENT (EHIA) IN SOUTH AFRICA



Guidelines



DEPARTMENT OF HEALTH
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ABBREVIATIONS AND ACRONYMS

CEC	Committee for Environmental Co-ordination
DAFF	Department of Agriculture, Fisheries and Forestry
DEAT	National Department of Environmental Affairs and Tourism
DG	Director-General of the Department of Health
DME	Department of Minerals and Energy
DoH	National, Provincial or Municipal Department of Health
DOL	Department of Labour
DWEA	Department of Water and Environmental Affairs
EAP	Environmental Assessment Practitioner
EH	Environmental Health
EHIA	Environmental Health Impact Assessment
EHP	Environmental Health Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Plan
HA	Health Act (Act 63 of 1977)
HSA	Hazardous Substances Act (Act 15 of 1973)
I and APs	Interested and Affected Parties
LA	Local Authority
NDA	National Department of Agriculture
NEMA	National Environmental Management Act (Act 107 of 1998)
NHA	National Health Act, 2003 (Act No. 61 of 2003)
NGOs	Non-Governmental Organizations
RMP	Risk Management Plan
ROD	Record Of Decision on Environmental Impact Assessment
PT	Project Team
TPCA	Tobacco Products Control Act (Act 83 of 1993)

GLOSSARY OF TERMS

Activity -	means policy, programme, plan and project
Air pollution -	The emission into the air of hazardous substances at a rate that exceeds the capacity of natural processes in the atmosphere to convert them ¹³ .
Agent -	Any chemical, physical, biological or social substance or factor being assessed, unless otherwise noted ²⁰ .
Applicant -	Means a person who has submitted or intends to submit an application for a basic assessment or Environmental Impact Assessment ³¹ .
Assessment -	The process of collecting, organizing, analyzing, interpreting and communicating data that are relevant to a decision ¹
Built environment -	Refers to the man-made surroundings that provide the setting for human activity, ranging in scale from personal shelter to neighborhoods to the large-scale civic surroundings.
Co-operative governance -	As outlined in section 41 of the Constitution of the Republic of South Africa, 1996 (Act No.108 of 1996)
Detrimental effect -	The result or consequence of a harmful action
Environment -	The conditions and influences under which any individual or thing exists, lives or develops, which include the following: the natural environment, including renewable and non-renewable natural resources such as air, water, land and all forms of life; the social, political, cultural, economic, working and other factors that determine people's place in and influence on the environment; natural and constructed spatial surroundings, including urban and rural landscapes and places of cultural significance, ecosystems and the qualities that contribute to their value ¹⁰
Environmental Assessment Practitioner (EAP) -	<p>Before applying for environmental authorisation of an activity, an applicant must appoint an EAP to manage the application. The EAP appointed must be independent; have expertise in conducting environmental impact assessments; perform the work relating to the application in an objective manner; comply with the Act, these Regulations and all other applicable legislation and disclose to the applicant and the competent authority all material information in the possession of the EAP³¹.</p> <p>The term "environmental assessment practitioner" does not apply to <i>specialists</i> (see health specialist below) in particular fields who may be involved in, or asked to give input to, particular stages of an environmental assessment from the perspective of his/her field of expertise.</p>
Environmental Health Practitioner (EHP) -	Any person who is registered in terms of the Health Professions Act, 1974 (Act 56 of 1974) as an Independent Practitioner with the Health Professions Council of South Africa (HPCSA) and who is allowed to practice in terms of the regulations defining the Scope of the Profession of Environmental Health promulgated in the Government Gazette No. R698 on the 26 June 2009.
Environmental hazard -	A source of danger and also a qualitative term that expresses the potential of an environmental agent to harm the health of certain individuals if the level of exposure is high enough
Environmental Health Impact Assessment -	combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population ³⁰
Environmental Impact Assessment -	The process of examining the environmental effects of developments ¹
Evaluation -	The process of weighing information, the act of making value judgments or ascribing values to data in order to reach a decision ¹
Guideline -	Directing action
Hazard -	Potential of a risk to cause harm ³ . The ability of an agent to produce a particular type of adverse health or environmental effect ²⁰ .
Hazard identification -	The identification, from studies and structure-activity relationships, of the adverse health effects associated with exposure to an agent ²⁰ .
Health -	A state of complete physical, mental and social well-being (this is not merely the absence of disease or infirmity) ⁹
Health effect -	A health effect is the result of a health impact on the individual, i.e. an impact on a population results in an effect on the individual, either positive or negative.

Health impact -	A health impact is the consequence of an activity (activity) on the health of a population i.e. the activity impacts on the health of the population, in a positive or negative manner.
Health Risk Assessment -	The process of estimating the potential impact of a chemical, biological, physical or social agent on a specified human population system under a specific set of conditions and for a certain timeframe ²⁰ .
Health Specialist -	An EAP managing an environmental impact assessment may appoint a person who is independent to carry out a specialist study or specialized process. A Health Specialist implies an independent person with expertise in the health field. It is suggested that a Health Specialist should have extensive education and training in a health related field, experience of participating in EHIAs, and have attended an EHIA training course.
Impact -	An effect or influence
Independent consultant -	A consultant not in the permanent service of the applicant ¹
Monitoring -	The repetitive and continued observation, measurement and evaluation of environmental data to track changes over a period of time to assess the efficacy of control measures ¹
Natural environment -	Encompasses all living and non-living things occurring naturally on Earth or some region thereof.
Principles -	Fundamental laws as the basis of action
Risk -	The probability or likelihood that, in a certain timeframe, an adverse outcome or harm will occur in a person, a group of people, plants, animals and/or the ecology of a specified area that is exposed to a particular dose or concentration of a hazardous agent, i.e. both the level of toxicity of the agent and the level of exposure play a role ²
Risk assessment -	The process of estimating the potential impact of a chemical, physical, microbiological or psychosocial hazard on a specified human population or ecological system under a specific set of conditions and within a certain time frame ²
Risk communication -	An interactive process involving the exchange among individuals, groups and institutions of information and expert opinion about the nature, severity and acceptability of risks and the decisions taken to combat them ²
Risk management -	The process of evaluating alternative actions, selecting options and implementing them in response to health risk assessments, with the decision-making incorporating scientific, technological, social, economic and political information ²
Risk management plan-	As part of the Environmental Management Plan, the Risk Management Plan provides detail on how and what health risk will be managed during and after the activity.
Scoping -	The process of identifying significant issues, alternatives and decision points that should be addressed by a particular EIR, this may include a preliminary assessment of potential impacts ¹
Screening -	A system for checking for the presence of significant issues

EXECUTIVE SUMMARY

Environmental Impact Assessments (EIA) in South Africa are conducted when a new development (activity) is listed in environmental legislation as being potentially harmful to the environment. Few of these Environmental Impact Assessments consider the impact of an activity on human health.

In the rare case where an Environmental Impact Assessments includes some aspects of health, these health studies are conducted without clear guidelines on how to conduct the assessment and which process to follow to ensure that health impacts are comprehensively investigated.

To ensure that environmental health becomes part of the Environmental Impact Assessment decision making process, health will need to be integrated into the present process in a structured and systematic manner. This will ensure that human health issues, resulting from a listed activity, are addressed before the start of an activity.

To ensure that environmental health is integrated into the Environmental Impact Assessment process, the Department of Health has developed a set of guidelines for environmental health impact assessment. The Environmental Health Impact Assessment (EHIA) Guidelines provide:

- A practical, step-by-step guide on how to conduct and manage an EHIA within the framework of an Environmental Impact Assessment.
- A procedure to identify and predict positive and negative health impacts *before* a new activity is undertaken.
- A road map to deliver evidence-based recommendations on health issues in an Environmental Impact Assessment process.
- Tools for assessing activities that have adverse effects on environmental health.
- A monitoring and evaluation (M&E) management system that serves as a guide in the activity and revision of policies and legislation.

The guideline consists of five sections:

- **Introduction:** places the guidelines in context and contains the main objectives of the document. The document was developed to enhance capacity in Environmental Health, particularly Environmental Health Practitioners.
- **Part 1: Overview of key concepts** - discusses the key concepts related to EHIA and places the EHIA within the impact assessment and policy context in South Africa. Furthermore, Part 1 provides definitions for environmental health and gives background on the approach taken.
- **Part 2: Stages in an Environmental Impact Assessment and the related stage and activities of an EHIA** - presents a step-by-step process for integrating EHIA into the Environmental Impact Assessment process.

- **Part 3: Monitoring and evaluation** - deals with monitoring and evaluation in terms of policy and legislative directives by Environmental Health.
- **Part 4: EHIA Reviewing and Monitoring Tools** - provides tools which may be helpful in the review of EHIA inputs into an Environmental Impact Assessment and to monitor health inputs into the impact assessment.

The purpose of the guideline is not to advocate that EHIAs become the exclusivity of the Environmental Impact Assessment process or for Environmental Health, at all levels of government, to appropriate the Environmental Impact Assessment procedures. Rather, the guidelines provide suggestions as to how an Environmental Impact Assessment and EHIA can be integrated and recommendations on how the decision-makers, DWEA and Environmental Health, can work together to ensure health issues and impacts are address by a development (activity).

Note: in these guidelines Environmental Health refers to the:

- Environment Health Directorate of the National Department of Health, and
- Environmental Health Section of the Provincial Department of Health and
- Environment Health Units, or equivalent, of Municipal Health Services.

Note: in these guidelines Environmental Health Practitioner (EHP) refers to any individual, at a national, provincial or local government level, registered with the Health Professions Council of South Africa (HPCSA) as an Environmental Health Practitioner. Registration with the HPCSA is a pre-requisite for professional practice as an EHP, and it is also a legal requirement to keep all personal details up to date once in practice.

Note: contrary to the norm, the term Environmental Impact Assessment is written out in full in the document to avoid confusion with EHIA and to avoid the use of too many acronyms.

INTRODUCTION

Purpose of the EHIA Guideline

The Environmental Health Impact Assessment (EHIA) Guidelines provides Environmental Health (note: in these guidelines Environmental Health refers to the relevant environmental health directorate, section or unit at a national, provincial and/or municipal level) with a practical approach on how an EHIA should be undertaken within the Environmental Impact Assessment framework and how to manage an EHIA process. An EHIA includes assessment of potential health impacts, both negative and positive, of an activity (i.e. policies, programmes, plans and projects).

The EHIA guideline provides a process for the identification and prediction of health impacts *before* the implementation of an activity and thus negative health impacts can be prevent and/or control and positive health impacts enhance.

This guideline document aims to provide the following:

- A road map to enable an Environmental Health Practitioner (EHP) to deliver evidence-based recommendations, into the Environmental Impact Assessment process, that embrace the concept of sustainable development and address current inequalities in health.
- A tool for assessing activities that may have an adverse impact on environmental health and for establishing the relationship between environmental hazards and health inherent in the identified activities in order to guide decision-making
- A monitoring and evaluation (M&E) management system for EHIA at national level to identify policy gaps and thus to serve as a guide in the development and revision of policies and legislation
- A guideline for the collection of information by Environmental Health for quarterly reports to the Department of Water and Environmental Affairs (DWEA) on the state of environmental management functions
- Guidance for applicants and/or Environmental Assessment Practitioners involved in the Environmental Impact Assessment process

The purpose of the guideline is not to advocate EHIA's become the exclusivity of the Environmental Impact Assessment process or practitioners, or for the Department of Health's Environmental Health directorate, section and/or units to appropriate the Environmental Impact Assessment procedures. Rather, the guidelines provide suggestions as to how an EHIA can become an integrated part of Environmental Impact Assessment (i.e. the EHIA still needs environmental health specialists to conduct the assessment) and recommendations on how the decision-makers, DWEA and Department of Health's Environmental Health directorate, section and/or units, can work together to ensure health issues and impacts are address by a development (activity).

It should be mentioned that this guideline does not call for an additional evaluation process, but provides guidance on the integration of EHIA into the existing Environmental Impact Assessment process.

The integration of EHIA into Environmental Impact Assessment would not only prove beneficial to the broader public health and sustainable development objectives but would also limit administrative issues that are linked to individual processes. Integration also allows for greater transparency in decision-making.

Once Environmental Health has adopted this document after consultation with various stakeholders, Environmental Health will facilitate the compilation of a document regulating collaboration between Environmental Health and DWEA so that EHIA will be implemented as part of the Environmental Impact Assessment process.

Scope of the EHIA Guideline

The type of EHIA that will be considered in this guideline is prospective EHIA⁶. Prospective EHIA focuses on activities that have not yet been implemented and attempts to predict the health ramifications of such activities. The predictions are derived from evidence-based knowledge.

The guideline takes a broad view of health in an EHIA. The 'broad' view is situated in the social or wellness model of health, which focuses on 'health and well-being' and the importance of both quantitative and *qualitative* evidence of health impacts.

Structure of the EHIA Guideline

The guideline consists of five sections:

- Introduction;
- **Part 1:** Overview of key concepts
- **Part 2:** Stages in EHIA
- **Part 3:** Monitoring and evaluation
- **Part 4:** EHIA Reviewing and Evaluating Tools

The **introduction** places the guidelines in context and contains the main objectives of the document. The document was developed to enhance capacity in Environmental Health's.

Part 1 discusses the key concepts related to EHIA and places the EHIA within the impact assessment and policy context in South Africa. The South African environmental management acts require activities that may have a detrimental impact on the environment to be controlled through an Environmental Impact Assessment process. This guideline facilitates co-operative governance through the effective participation of Environmental Health's in the DWEA existing Environmental Impact Assessment process. Furthermore, Part 1 provides definitions for environmental health and gives background on the approach taken.

Part 2: presents a step-by-step process for integrating EHIA into the Environmental Impact Assessment process. Co-operative governance is one of the principles underlying this document. An Environmental Health should be able to give its view on the health risks requiring attention. DWEA should ensure that applicants incorporate issues affecting health into the Environmental Impact Assessment process and that Environmental Health is involved in this process.

Part 3 deals with monitoring and evaluation in terms of policy and legislative directives by Environmental Health.

Part 4 provides tools which may be helpful in the review of EHIA inputs into an Environmental Impact Assessment and a tool to monitor health inputs into the impact assessment.

PART 1: OVERVIEW OF KEY CONCEPTS

What do we mean by ‘environmental health’?

To be able to define environmental health impact assessment (EHIA), one needs to understand what is meant by **environmental health**.

Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, biological, social and psychosocial factors in the environment. It is also related to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially affect the health of present and future generations¹¹.

It is important to note that health is influenced by a broad range of determinants, some of which are shown in Table 1. New development or activities may impact on these important health determinants, which lead to changes in health outcomes or the health status of individuals and communities. The determinants of health are largely environmental and social.

*Table 1: Examples of key factors that determine human health*²⁶

Fixed	Social and economic	Lifestyle and behaviours	Access to services	Environment
<ul style="list-style-type: none"> • Genes • Sex • Ageing • Race 	<ul style="list-style-type: none"> • Poverty • Employment • Social exclusion • Community structure • Crime 	<ul style="list-style-type: none"> • Diet • Physical activity • Smoking • Alcohol • Sexual behaviour • Drugs • Coping skills • Culture 	<ul style="list-style-type: none"> • Education • Health services • Social services • Transport • Leisure • Basic services 	<ul style="list-style-type: none"> • Air quality • Noise • Housing • Water quality • Water quantity • Waste management • Social environment • Risk of injury • Sun exposure • Disease vectors and pests • Communicable diseases • Climate change • Food safety • Environmental pollution • Occupational hazards • Radiation • Hazardous substance

Similar to the definition of environmental health of the WHO³⁴, the definition of environmental health relevant to these guidelines includes those determinants of health which can be modified by listed activities (developments) and which can be addressed by environmental management.

What are environmental health impacts?

Environment health impacts are the overall effects, direct or indirect, of a policy, plan, programme or project on the health of a population. Anything which alters a determinant of health (see Table 1) may, as a consequence, have an impact on health.

If members of a community are exposed to a risk (e.g. agricultural pesticides) that cause health impacts (health problems or death), and that risk factors is removed from the environment (e.g. through legislative action), it can be expected that the overall number of health impacts in the community would decline.

The guidelines include health impacts associated with the environment (natural and built; see glossary of terms) and those health impacts that are already covered by health-related legislation (e.g. lifestyle impacts of tobacco products).

Table 2 provides some examples of health impacts and effects linked to an environmental determinant. Health impacts and effects will be dependent on the type of activity and the hazard and risk of the activity on human health.

Table 2: Examples of environmental health impact and effects. Based in part on 34

Environmental Determinant	Health Impact (population)	Health Effect (individual)
• Outdoor air pollution	• Increased cases of asthma	• Respiratory infection • Selected cardiopulmonary disease • Lung cancer
• Indoor air pollution	• Increased cases of asthma	• Respiratory infection • Asthma • Allergic reaction • Irritant effects on the human face, eye and respiratory airways • Cancer
• Climate change	• Increase water-related disease outbreaks	• Diarrhoeal disease • Malaria • Selected unintentional injuries • Protein-energy malnutrition
• Noise	• Increase/decrease in noise levels	• Hearing damage • Stress • Sleep disturbance • Mental health
• Disease vectors and pests	• Malaria • Bilharzia	• Increase/decrease malaria incidence
• Water quality or quantity	• Water-borne and water-washed disease outbreaks • Poor personal and household hygiene • Decline/improved lifestyle	• Increase/decrease incidence of diarrhoea • Skin and eye disease
• Waste management – solid and liquid waste	• Cholera outbreak • Outbreak/decline of diarrhoeal disease • Typhoid outbreak • Odour nuisance	• Diarrhoeal incidence increase/decrease
• Environmental pollution		• Liver damage • Skin irritation • Respiratory problems • Cancer

Not all potential impacts on health are negative. Many activities (developments) may result in benefits which outweigh potential adverse impacts e.g. improved waste disposal or improved water supply and sanitation services. It is as important to identify the potential positive environmental health impacts as the negative ones.

What is an EHIA?

A health impact assessment is defined as:

“A combination of procedures, methods and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.”³⁰

Thus, on the basis of the above definitions of environment health and health impact assessment, EHIA can be described for the purpose of this guideline as the process of examining the environmental risks arising from human activities that may have an impact on the health of communities.

EHIA provides a systematic process through which health hazards, risks and opportunities can be identified and addressed in a development activity planning process, to avoid transfer of hidden health costs and to promote multi-sectoral responsibility for health and well-being.

EHIA is a multidisciplinary activity, crossing the boundaries between the public health, healthcare, environment and social sciences.

Like an Environmental Impact Assessment, an EHIA includes a number of steps (Figure 1) below, including

- **Screening:** The main purpose of this stage is to undertake a preliminary assessment (or screening) to see if a new proposal/programme or policy is likely to pose any significant health impacts and effect and is therefore worth subjecting to a full HIA.
- **Scoping:** this stage sets out the boundaries of the impact assessment
- **Assessment or appraisal:** this stage is where the data will be collected in order to identify the potential or actual impacts on health of a community/population
- **Implementation and monitoring**

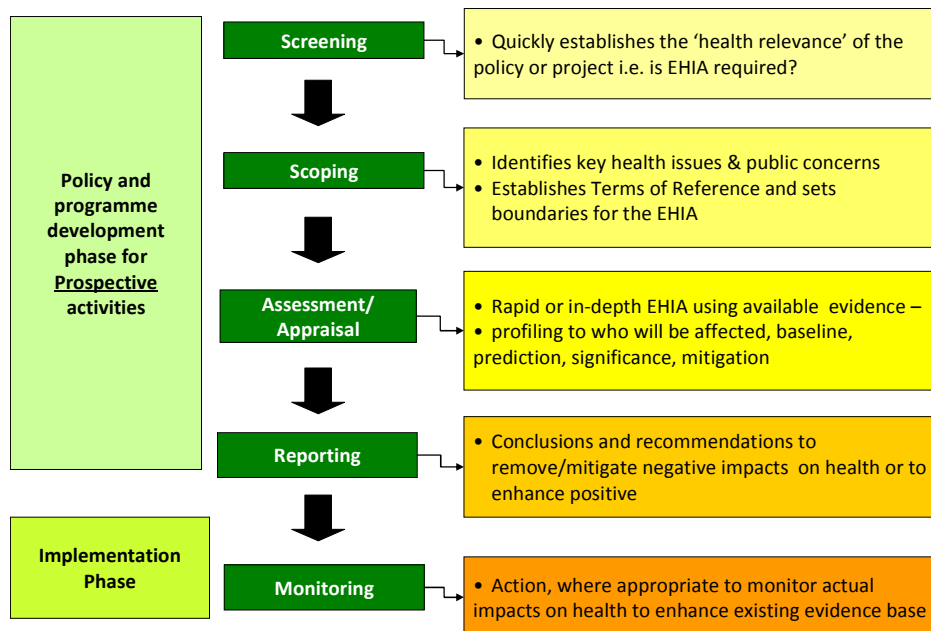


Figure 1: Health Impact Assessment procedure of the World Health Organization (taken from www.who.int/hia/tools/en)

The Guidelines integrate these EHIA steps into the South African Environmental Impact Assessment process.

The aspects of EHIA that are covered include the following:

- Environmental health: health effects of impacting activities (risk assessment and risk management)
- Epidemiology and toxicology
- Interaction with natural resources
- Economic factors: cost-benefit analysis of the activity (including the cost of remedying the health effects)
- Social factors: the broader development context of surrounding communities, including consideration of levels of vulnerability and bearing in mind that positive health impacts uplift the social standing of communities.

Why conduct an EHIA?

The effects of activities on human health have been acknowledged to be a key issue in Environmental Impact Assessment, but little progress has been made in integrating health criteria and health professionals into the process. Even activities which are expected to be directly beneficial to health may have indirect negative impacts on health.

Environmental Impact Assessment most commonly will include a health assessment when there are concerns related to effects of pollutants. However, other types of health impacts, such as occupational injury, mental health problems and communicable disease, are very often not considered in these assessments. EHIA provides a means of considering *all health* effects in the Environmental Impact Assessment of a planned activity.

The purpose of an EHIA is to *inform* and *influence* decision-making on a planned activity so health protection and promotion are effectively integrated into planning²⁴.

EHIA is a structured, solution-focused and action-oriented approach to maximizing the positive and minimizing the negative health impacts of *new initiatives*¹⁹.

Five reasons are generally given for why EHIA help improve planning and policy development¹⁹:

- to identify hazards to health from the proposed activity;
- to reduce or eliminate the potential risk to health arising from these hazards and to communicate the threats of remaining risks.
- to identify the way in which proposed activity can promote and enhance health;
- to identify and address the direct or indirect social, environmental and economic impacts of a activity on health;
- to reduce or eliminate health inequities occurring as a result of the proposed activity.

The integration of EHIA into Environmental Impact Assessment would not only prove beneficial to the broader public health and sustainable development objectives but would also limit administrative issues that are linked to individual processes. Integration also allows for greater transparency in decision-making.

The assessment of health impacts, through EHIA, will assist Environmental Health to monitor progress towards environmental health practice that embraces the concept of sustainable development.

EHIA in the Policy Context

The implementation of EHIA in South Africa is regulated by a number of underpinning policies, including:

- The Constitution;
- National Environmental Management Act (NEMA);
- National Health Act.

Some of these policies are discussed in more detail in Box 1 below, with other policies which relate to environmental health activities in the country are discussed in Appendix 5.

Box 1: Policies which regulate EHIA and Environmental Impact Assessment in South Africa

The Constitution

Sustainable development discourse is used in this guideline document. The over-arching legislation is the Constitution of South Africa, in particular section 24, which places people and their needs at the forefront of environmental management. The Constitution brought about a change in South African environmental policy by providing a right to “an environment that is not harmful to [human] health or well-being” and to have the environment protected, for the benefit of present and future generations, through reasonable legislative measures. These measures include the prevention of pollution and ecological degradation, the promotion of conservation, the securing of ecologically sustainable development and the utilization of natural resources while promoting justifiable economic and social development.

The National Environmental Management Act

Section 14(c) of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), provides that an environmental management plan (EMP) should describe policies, plans and programmes in which the relevant department is involved that are designed to ensure compliance with government policy by organs of state.

The National Environmental Management Act (NEMA) gives legal effect to the internationally agreed discourse of sustainable development and the principle of co-operative governance among organs of state with regard to environmental management by establishing principles for decision-making, institutions to promote co-operative governance and procedures for the co-ordination of environmental functions. Under this Act, the different organs of state report on progress made in relation to different aspects of environmental management in which they are involved as part of their mandate.

The National Health Act (Act 61 of 2003)

The National Health Act (Act 61 of 2003) provides a framework for a structured uniform health system in South Africa, taking into account the obligations with regard to health services imposed on the national, provincial and local governments by the Constitution and other laws. Section 20 gives legal effect to the functions of Environmental Health with regard to environmental health management. The DG should issue and promote adherence to, norms and standards on health matters, including conditions that constitute a health hazard and facilitate the provision of indoor and outdoor environmental pollution control services. The Act also provides for environmental health investigations in section 88.

It should be noted that the regulations defining the scope of the profession of environmental health states that one of the acts that fall within the scope of practice of an environmental health practitioner is *approving environmental health impact assessment reports and commenting on environmental impact*

assessment applications³³. Review of EHIA reports and involvement in the Environmental Impact Assessment decision-making process are thus part of the scope of activities of an EHP.

EHIA in the Assessment Context

There are several types of assessments used in South Africa. Table 3 shows some of the process and tools used in environmental and impact assessment.

Table 3: Various forms of assessment applied in South Africa

	Risk Assessment	Health Impact Assessment (HIA)	Environmental Impact Assessment (EIA)	Strategic Environmental Assessment (SEA)
Motivation for use	<ul style="list-style-type: none"> Used extensive in the HIA and EIA process 	<ul style="list-style-type: none"> Recommended by the WHO, EU, World Bank, UNEP, FAO and Department of Health 	<ul style="list-style-type: none"> Legislated requirement for listed activities in South Africa 	<ul style="list-style-type: none"> Voluntary
Focus		<ul style="list-style-type: none"> Focuses on assessment of health impacts of a project, plan, programme or policy 	<ul style="list-style-type: none"> EIA focuses on proposed physical and biological (GMOs) developments 	<ul style="list-style-type: none"> SEA focuses on proposed actions at a "higher" level such as new or amended laws, policies, programmes and plans
Application	<ul style="list-style-type: none"> A tool used to determine hazards, risk and impacts Used to recommend limits to exposure to toxic substances 	<ul style="list-style-type: none"> Health is determined by a multiplicity of factors including socio-economic and environmental factors Should be included as part of an EIA 	<ul style="list-style-type: none"> Assesses impact of an activity on the environment (soil, air, water, wastes, fauna, flora and humans) 	<ul style="list-style-type: none"> Incorporates principles of environmentally sustainable development at the policy, plan and programme levels. Starts well in advance of plan or project execution
Stakeholder inputs	<ul style="list-style-type: none"> None specified 	<ul style="list-style-type: none"> Public participation critical and integral to the process 	<ul style="list-style-type: none"> Public participation is a legislative requirement 	<ul style="list-style-type: none"> Recommended
Procedure	<ul style="list-style-type: none"> Four-stage procedure; Combines three elements²⁵: <ol style="list-style-type: none"> Hazard identification Effect of exposure to hazard Dose-response assessment Characterize risk to estimate the burden of disease 	<ul style="list-style-type: none"> Five-stage procedure: <ol style="list-style-type: none"> Screening Scoping Appraisal Reporting Monitoring 	<ul style="list-style-type: none"> Either Basic Assessment or full EIA Full EIA includes five-stages <ol style="list-style-type: none"> Application Scoping EIA Decision Monitoring 	<ul style="list-style-type: none"> No specified procedure

Environmental health concerns can be integrated in the South African Environmental Impact Assessment process by²³:

- Introducing the relationship between the environment and health hazards, health risk, and health impacts and effect;
- Screening activities for hazards to environmental health;
- Assessing and quantifying the risks to human health of hazards identified with, or resulting from activities;

- Developing health risk management plans (RMP) as part of the overall environmental management plan (EMP);
- Ensuring that the risk management plans is implemented during implementation of the activity and beyond.

Understanding Environmental Impact Assessment Procedures in South Africa

All application for environmental authorisation in South Africa must be supported by an assessment (Figure 2). The Environmental Impact Assessment Regulations provide for two types (routes) of environmental assessment, namely a basic assessment route and/or a scoping/Environmental Impact Assessment route¹. The route the environmental assessment is required to take is specified in the List of Activities and Competent Authorities Identified in terms of Sections 24 and 24d of the National Environmental Management Act, 1998 which dictates the route based on the activity type²⁹.

The purpose of basic assessment is to provide a mechanism for the complete but **concise** assessment of activities.

The scoping and Environmental Impact Assessment process is reserved for activities which have the potential to result in significant impacts which are **complex** to assess. Scoping and environmental impact assessment accordingly provides a mechanism for the comprehensive assessment of activities that are likely to have more significant environmental impacts¹.

The Environmental Impact Assessment process takes place in three broad phases (see Figure 2), namely submission of an application form, scoping and Environmental Impact Assessment¹. The diagram below sets out an abbreviated representation of the Environmental Impact Assessment processes and the relationship between the different processes.

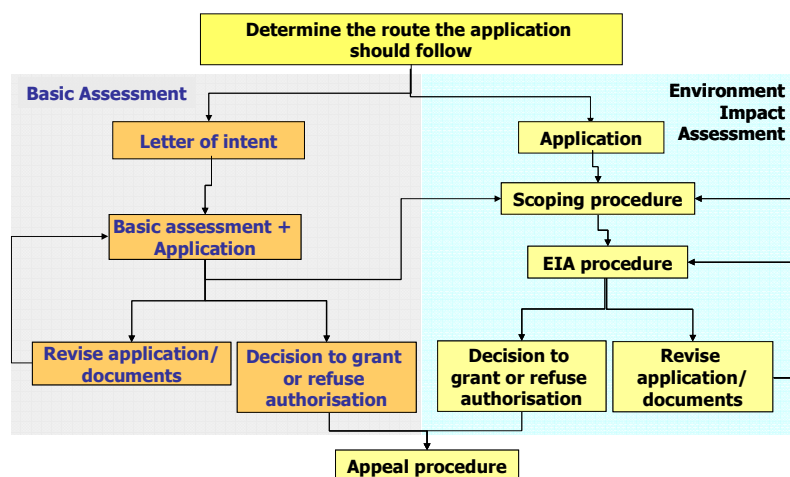


Figure 2: Simplified flow diagram of the Environmental Impact Assessment process in South Africa¹. The figure shows the two routes for applications (1) basic assessment (left); and (2) scoping and Environmental Impact Assessment (right). The route of application is determine by the type of listed activity and is specified in the Schedule of Lists Activities.

The EHIA process is dealt with within the legislative framework already in existence. This presents the challenge of fitting the EHIA into this Environmental Impact Assessment.

Who conducts an Environmental Impact Assessment and an EHIA

The Environmental Impact Assessment procedure in South Africa has two groups of role-players, namely: the group of role-players who manage and conduct the Environmental Impact Assessment and the group of role-players who review and approve the Environmental Impact Assessment.

An Environmental Impact Assessment is initiated by an **applicant**. An applicant is a person or organisation who applies to the **competent authority**, usually to the Department of Water and Environmental Affairs (DWEA), for environmental authorisation to undertake a listed activity lawfully²². The applicant is thus the person or organisation who wishes to carry out a new policy, programme or project (activity).

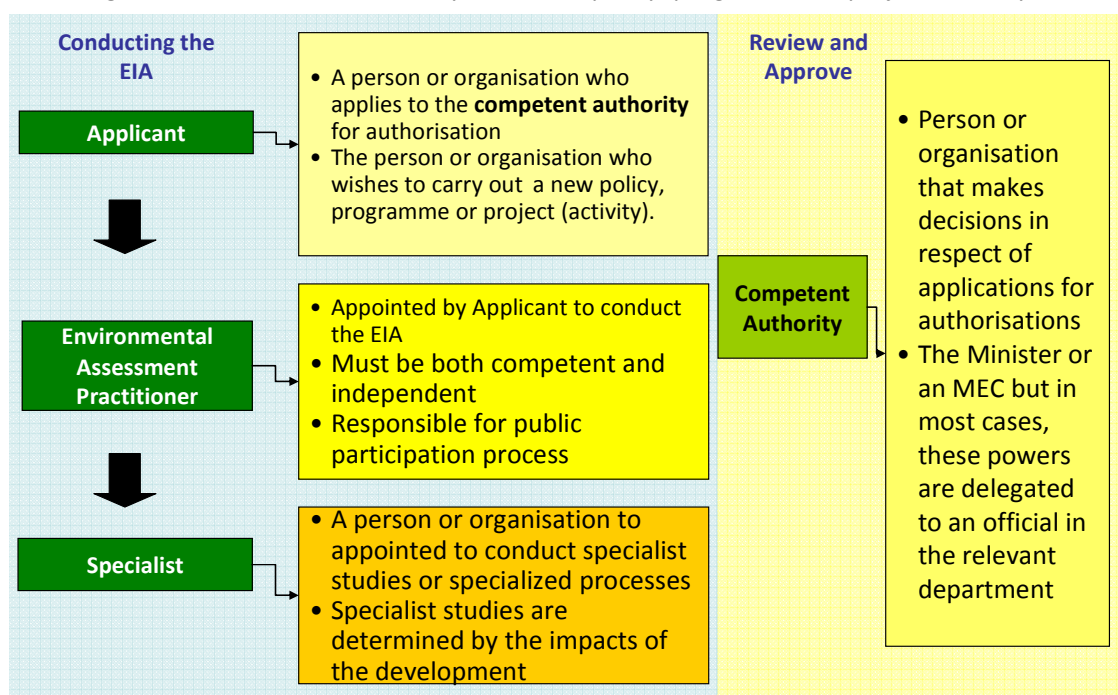


Figure 3: Role-players in the Environmental Impact Assessment process in South Africa

The competent authority is the person or organisation that makes decisions in respect of applications for environmental authorisations. According to the Environmental Impact Assessment Regulations, the competent authority is the Minister or an MEC but in most cases, these powers are delegated to an official in the relevant department i.e. DWEA. The overarching task of the competent authority is to make decisions in respect of the application process and whether to grant or refuse environmental authorisation.

The role played by **Environmental Health** will be one of **review** of the Environmental Impact Assessment, particularly the health aspects, to support and inform the decision made by the competent authority.

The Environmental Impact Assessment is not conducted by the applicant. For this purpose, the applicant must appoint an independent **Environmental Assessment Practitioner** (EAP) to manage the application process²². This ensures that the Environmental Impact Assessment is conducted properly and objectively. The EAP must be both competent and independent. The EAP is also responsible for ensuring that a public participation process is undertaken and for taking into account any comments that are made during this process²².

The Environmental Assessment Practitioner may appoint a person or organisation to conduct **specialist studies or specialized processes** for the Environmental Impact Assessment. A specialist report or a report on a specialized process must be prepared in accordance with Section 33 of the Environmental Impact Assessment regulations. Specialist reports, a result of a specialist study, are determined by which impacts of the development (activity) are concerns. Specialist report form part of an Environmental Impact Assessment Report and typically may include studies related to those shown in Box 2 below.

Box 2: Examples of specialist studies commonly included in Environmental Impact Assessment in South Africa.

- | | |
|---|------------------------------------|
| ⇒ Ecological Impact Assessment | ⇒Traffic impacts |
| ⇒ Geohydrological Impact Assessment | ⇒Visual Impact Assessment |
| ⇒ Heritage Impact Assessment | ⇒Impacts on agricultural potential |
| ⇒ Impacts on aquatic ecosystems | ⇒Impacts on flora and fauna |
| ⇒ Planning impacts | ⇒Visual impacts |
| ⇒ Air Pollution and Health Impacts | ⇒ Noise impacts |
| ⇒ Risk assessment | ⇒ Socio-Economic Impacts |

The last 4 bullets related to human health and thus relate to EHIA. However, these specialist studies have a narrow focus (i.e. impact of air pollution on health or impact of noise as a nuisance) and do not necessarily address the broader environmental health impacts address in an EHIA. An EHIA that address health impacts of a development (activity) would include a specialist study or number of specialist studies that address health issue in a broad context.

Specialist studies are conducted by an expert in the field of the study. Environmental Health Specialist studies should thus be conducted by a certified **Environmental Health Expert/Specialist** (hereafter referred to as a Health Specialist), preferably a person or organisation who is independent of the decision-maker and applicant, has extensive education and training in a health related field, experience of participating in EHIAs, and has attended an EHIA training course.

PART 2: THE STAGES IN ENVIRONMENTAL IMPACT ASSESSMENT AND THE RELATED STAGE AND ACTIVITIES OF A EHIA

The overriding principle in these EHIA guidelines is that EHIA should not be a parallel or stand-alone process in South Africa, but rather an integral part of the Environmental Impact Assessment process already in place in the country.

This chapter outlines the Environmental Impact Assessment procedures and the related EHIA process, describes the involvement of different role-players with much attention focused on Environmental Health official, who will in most cases be the EHP during the various stages and gives a detailed description of the purpose and execution of the individual stages.

The integration of EHIA and Environmental Impact Assessments in South Africa will require two important steps to be taken before application of the guidelines²⁶:

- The role and responsibilities of the Environmental Health in all critical steps of the Environmental Impact Assessment procedure must be defined and formalized (addressed in these guidelines but will need agreement via an MOU between Environmental Health and DWEA).
- Based on the initial screening, health elements must be included in the Environmental Impact Assessment procedure as early as possible. The Basic Assessment Report, Scoping Report and Environmental Impact Assessment Report should all be scrutinised by Environment Health to determine whether health issues and impacts have been addressed (addressed in these guidelines but will need agreement via an MOU between Environmental Health and DWEA).

The sections below provide details of the steps of an Environmental Impact Assessment and how the equivalent EHIA step may be integrated to address Environmental Impact Assessment Regulatory requirements.

STAGE 1 (BASIC ASSESSMENT)

PURPOSE OF THIS STAGE IN THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS

In the Environmental Impact Assessment procedure the basic assessment process is a succinct process which results in a Basic Assessment Report. The Basic Assessment Report provides a brief overview of the potential impacts of the activity on the environment and the impacts of the environment on the activity. This report is submitted by Environment Assessment Practitioner, together with an Environmental Impact Assessment application form, to the Department of Water and Environmental Affairs for authorization.

If the Basic Assessment Report provides sufficient detail to allow the competent authorities (DWEA) to make a decision as to whether the activity should proceed, the authorisation may be granted.

However, if the competent authority cannot make a decision based on the information provided in the Basic Assessment Report, the authority will either request additional information to be submitted or will recommend that the activity be subject to a scoping and environmental impact assessment process.

In essence, the basic assessment stage determines whether an activity warrants a detailed scoping and Environmental Impact Assessment process or not.

LINKING THE EHIA SCREENING TO THE BASIC ASSESSMENT OF THE ENVIRONMENT IMPACT ASSESSMENT PROCESS

In international literature, related to EHIA, the first step is the screening procedure.

SCREENING – DO WE DO AN EHIA? Health screening scrutinizing the Basic Assessment application and report for certain environmental health triggers in order to quickly and systematically establish whether an EHIA is required. The screening of an EHIA tends to classify projects into three categories according to their nature and size:

- Those that will not be subjected to any EHIA;
- Those that will be subjected to a simple and rapid assessment; and
- Those that will need an intermediate or comprehensive EHIA.

Each of these EHIA varies in cost, time required and complexity of the assessment (Figure 4), all of which will determine the level of EHIA appropriate for the assessment.

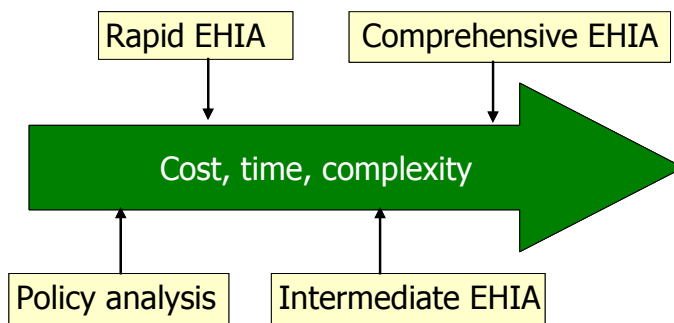


Figure 4: Level of EHIA in relation to cost, time and complexity³².

Table 4 provides a detailed comparison of the various levels of EHIA.

Table 4: Comparison of the various level of EHIA.

	RAPID	INTERMEDIATE	COMPREHENSIVE
When applied	<ul style="list-style-type: none"> When there are no more than three health impacts of concern that need to be assessed in more detail 	<ul style="list-style-type: none"> When there are three to ten health impacts of concern that need to be assessed in detail 	<ul style="list-style-type: none"> When there are major health impact concerns and all potential impacts need to be assessed in detail
Timeframe	<ul style="list-style-type: none"> 2-6 weeks approximately 	<ul style="list-style-type: none"> approximately 12 weeks 	<ul style="list-style-type: none"> approximately 6 months
Focus	<ul style="list-style-type: none"> A minimum quantification of potential health impact can be used for screening and prioritising. 	<ul style="list-style-type: none"> Provides a more thorough assessment of potential health impacts, and more detail on specific predicted impacts 	<ul style="list-style-type: none"> Provide a comprehensive assessment of potential health impacts
Data input requirements	<ul style="list-style-type: none"> Use of existing knowledge, expertise and research 	<ul style="list-style-type: none"> Some, but minimal, new data may be required to be collected 	<ul style="list-style-type: none"> Requires extensive literature searches, analysis of existing data, collection and quantification of new data and sensitivity analysis
Human resource required	<ul style="list-style-type: none"> Usually does not require a Health specialist 	<ul style="list-style-type: none"> May require a Health specialist inputs 	<ul style="list-style-type: none"> Requires a Health specialist
Stakeholder requirements	<ul style="list-style-type: none"> Limited stakeholders meetings 		<ul style="list-style-type: none"> Includes extensive stakeholder participation

Screening may therefore, involve three types of activity:

- **deciding which activity requires an EHIA:** making a first judgement of whether or not an activity may have any potential health impacts and effect and deciding if an EHIA should be done;
- **deciding the level of EHIA required for the activity:** making a decision, based on the result of the screen, of the level of EHIA required for the activity;
- **deciding what sorts of health impacts and effect will need to be considered:** judging the kinds of health impacts that may be expected, either positive or negative.

THE METHOD OF HEALTH SCREENING IN THE BASIC ASSESSMENT

The Basic Assessment of an Environmental Impact Assessment should be assessed using the screening tool in Appendix 1. If the application of the screening tool triggers a concern of health impacts related to the activity, then the Basic Assessment should at the most basic level include a **rapid appraisal** EHIA (Box 3).

Box 3: Components of the screening assessment

Screening consists of:

1. assessment of the Basic Assessment against a checklist of criteria for environmental health risk to establish the need for a EHIA (see screening tool in Appendix 1);
2. A rapid EHIA which includes:
 - using local demographic data, identification of vulnerable populations;
 - using environmental data, identification of vulnerable natural resources where damage has the potential to cause health impacts.
 - capturing interested and affected parties environmental health concerns (to a limited extent).
3. Establishing contact with community networks.
4. Setting up of an EHIA committee (see Box 6)

THE ENDPOINT OF THE BASIC ASSESSMENT

The Basic Assessment Report, which should include the result of the rapid EHIA, is submitted to DWEA. The Basic Assessment Report will identify all the activities that may have a detrimental impacts and effect on human health and it is the responsibility of the EHP within Environmental Health to review this Basic Assessment with regard to health impacts and to communicate the findings of their review to the DWEA. It is strongly recommended that the Environmental Health make use of a committee to conduct these reviews (see Box 6 below related to the setting up of a committee to conduct these reviews)

THE DECISION

The DWEA consults Environmental Health on any proposal to undertake an identified activity after receiving the Basic Assessment Report. If mechanisms for consultation between Environmental Health and the DWEA are not in place, the responsible EHP in Environmental Health may review the Environmental Impact Assessment application register regularly to be able to participate in the Environmental Impact Assessment process.

Based on the result of application of the Screening Tool and the review of the Basic Assessment Report, Environmental Health should provide DWEA with recommendations as to whether:

- the Basic Assessment Report adequately addresses health impacts;
- a health specialist assessment should be conducted and submitted with the Basic Assessment Report; or
- A full EHIA should be conducted.

Figure 5 shows the Basic Assessment screening process for the Environmental Impact Assessment and EHIA processes.

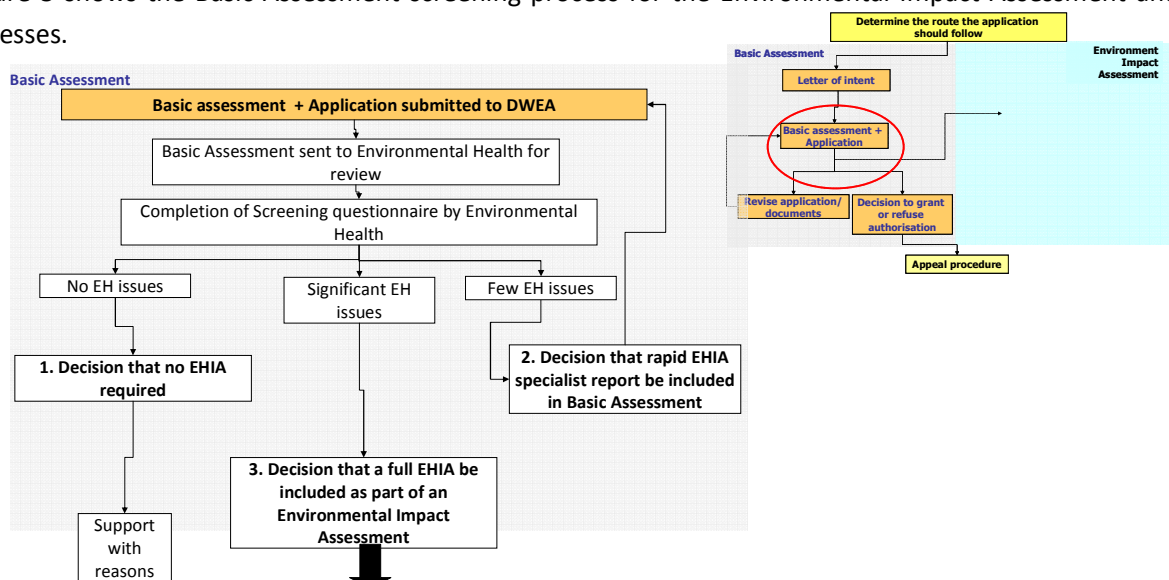


Figure 5: The diagram on the left is a flow diagram of Basic Assessments of the Environmental Impact Assessment and the EHIA screening process. Colour box reflects DWEA activity, while the clear boxes reflect the EHIA screening process and Environmental Health decisions. The diagram on the right relates this stage of activities to the Environmental Impact Assessment procedure.

ROLES AND RESPONSIBILITIES OF ENVIRONMENTAL HEALTH

- Consider the extent of any existing evidence base and data sources.
- Visit the site of the proposed activity.
- Assess whether a particular activity has the potential to impact on health using the screening tool for that activity
- Within 10 days, inform the DWEA in writing that the potential health impacts are expected to:
 - be negligible; or
 - be of **concern** which results in recommendation that environmental health impacts and effect issues should form part of a specialist report which is included in the re-submitted Basic Assessment; or
 - be **significant** which results in the recommendation that environmental health impacts and effect issues are included in the Plan of Study for scoping or a scoping Report.

STAGE 2 (SCOPING)

PURPOSE OF THE SCOPING STAGE IN AN ENVIRONMENTAL IMPACT ASSESSMENT

The purpose of the scoping procedure in an Environmental Impact Assessment process is to determine the Plan of Study (similar to a Terms of Reference) for the Environmental Impact Assessment itself²². The emphasis during scoping is to identify:

- Issues;
- Potential impacts of the activity; and
- Potential alternatives to the activity.

The scoping procedure results in the Scoping Report, which includes the plan of study for the Environmental Impact Assessment. The Scoping Report thus provides a practical foundation, in the form of the Plan of Study, for the Environmental Impact Assessment.

LINKING THE EHIA TO THE SCOPING STAGE OF AN ENVIRONMENTAL IMPACT ASSESSMENT

The scoping of health in an Environmental Impact Assessment will include the screening and scoping stage of an EHIA.

Screening – do we do an EHIA? Screening scrutinizing the **scoping report** of the Environmental Impact Assessment for certain EHIA triggers in order to quickly and systematically establish whether an EHIA is required for the Environmental Impact Assessment (see Basic Assessment Stage above for more details on screening).

Scoping – how should we do it? If the screening of the activity for health issues indicates an EHIA is required, then EHIA **scoping** follows. If the screening of the activity indicates that an EHIA is not required, then the Environmental Impact Assessment proceeds without the need for specialist EHIA.

EHIA scoping is the process of identifying the particular health parameters that should be addressed in preparing an Environmental Impact Report (EIR). It sets the boundaries in time and space for the assessment and formulates the plan of study for the EHIA i.e. conducted by the environmental health specialists.

Environmental Health can make use of the Scoping tool in Appendix 2 to review scoping report provided by DWEA. At a minimum, an EHIA scoping report should include those components shown in Box 4 below.

Box 4: Components of scoping

Environmental health scoping includes:

- Identifying key stakeholders;
- Identifying potential health issues and concerns;
- Identifying hazards and risks;
- Identifying and prioritising potential impacts to be considered in the EHIA specialist study including:
 - Identifying all the potential health impacts of the exposure to the hazards highlighted in the step above; and
 - Assessing which impacts are likely to be important and thus need to be addressed in the EHIA and which are not important.
- Determining whether modifications or alternative to the activity (development) need to be considered;
- Provide guidelines for the Health Specialist. More than one Health Specialist may be required, depending on the risks and impacts identified in the steps above.
- Setting up of an EHIA review committee (see Box 6)

METHOD OF EHIA SCOPING WITHIN AN ENVIRONMENTAL IMPACT ASSESSMENT SCOPING

Environmental Impact Assessment scoping, where health issues have been highlighted, should have identify the health issues, health hazards, health risk and health impacts resulting from the activity. A **health hazard** is a potential harm. A **health risk** is a measure of the probability of a health hazard causing harm to a particular group, while the **health impacts and effect** is any change in health risk that is reasonably attributed to the activity.

IDENTIFYING HEALTH ISSUES

Identifying the health issues related to the activity, require the Environmental Assessment Practitioner to capture health issues based on perceptions, science, economics and social factors²⁰: Identifying issues includes identifying²⁰:

- What is the health concern related to the activity;
- What is causing the identified concern?
- Why is the concern an issue?
- How the concern was initially identified;

- How the concern was raised;
- Whether the issue is amenable to risk assessment; and whether risk assessment is appropriate.

There are a number of methods which could be used by Environmental Assessment Practitioners for identifying health issues during scoping of an activity, i.e. rating; ranking techniques, public participatory process, web-based study and discussion with the scoping committee (see Box 2 below).

IDENTIFYING HAZARDS

Hazard identification is the process of determining whether exposure to an agent can cause an increase in the incidence of specific adverse health impacts (e.g., cancer, birth defects) and whether the adverse health impacts and effect is likely to occur in humans²¹. It involves determining²⁰:

- What type of health impacts might be caused by the agent; and
- How quickly the adverse health impacts might be experienced and their duration.

Environmental health hazards may be caused by physical^a, chemical^b, biological^c or social^d factors in the environment which is effected by the activity. Exposure to an agent may generate many different adverse impacts in a human: diseases, formation of tumors, reproductive defects, death, or other impacts²¹.

Hazard identification is the starting point of the EHIA and includes the making of a list of possible health hazards that could be associated with the activity. The hazards can be categorised based on transmission exposure pathways and interventions options for example:

- agents of communicable disease (such as malaria parasite)
- agents of non-communicable diseases (such as pesticides);
- agents or causes of physical injury;
- causes of malnutrition (such as hunger); and
- causes of psychosocial disorder (such as inequity or gender imbalance).

Hazardous agents related to the activity may be identified based on a range of data sources such as health/environmental health monitoring; emissions inventories; biological monitoring (i.e. water); disease surveillance; epidemiological studies; and/or information about analogous hazards²⁰.

Although the identification of health hazards needs to be systematic and comprehensive, the construction of a hazard matrix in the scoping stage does not mean that all conceivable hazards will have to be assessed in the Environmental Impact Assessment. A rapid or intermediate health risk assessment can be

^a Physical factors include heat, cold, noise, mechanical hazards, solar radiation, ionising rations (e.g. X-rays) and non-ionising radiation (e.g. microwaves) and vibrations²⁰.

^b Chemical factors include synthetic and naturally occurring substances²⁰

^c Biological factors include viruses, prions, bacteria, parasites and vermin²⁰

^d Social factors include poverty and unemployment²⁰

conducted at the scoping stage using secondary sources, key informant interviews and reconnaissance, to eliminate many of the health hazards from further consideration.

IDENTIFYING AND PRELIMINARY ASSESSMENT OF HEALTH RISK

Once health hazards have been identified these are translated into **health risk** factors. The three principal risk factors are²⁶:

- Community risk factors: include characteristics of a community that make it vulnerable to health risks i.e. poverty, education level, immune status, age, gender, training and place of origin. They can be subdivided into biological factors and lifestyle factors. The activity may result in changes in the various hazards related to community risk factors ;
- Environmental risk factors: includes both the physical and social environment;
- Institutional risk factors: concerns the capacity, capabilities and jurisdiction of health protection agencies. Analysis of institutional risk factors helps to identify gaps in institutional responsibility and accountability that will be needed to implement the health management plan.

Once the hazard and risk factor data has been gathered, analysed and cross-checked the change in health risk (impact) for each health hazard needs to be identified. An example of how to present hazard, risk factor and impact is shown in Table 5.

Table 5: Example of how hazards and risks can be listed for prioritization²⁶

Health Hazards	Community Risk factors	Environmental Risk Factors	Institutional Risk Factors	Change in health risk attributable to the project
Untreated domestic wastewater	<ul style="list-style-type: none"> • Community lack sanitation; • Lack of hygiene education; • Drinking from untreated water sources 	<ul style="list-style-type: none"> • Pollution of water resource used for drinking 	<ul style="list-style-type: none"> • Municipality lack capacity to test effluent quality • Lack of capacity to correctly run the treatment plant 	<ul style="list-style-type: none"> • Increase in communicable diseases i.e. diarrhoeal disease
Untreated industrial effluents				<ul style="list-style-type: none"> • Increase heavy metal toxicity
etc	• etc	• etc	• etc	• etc

Faced with the wide range of health hazards associated with the activity these need to be prioritized for those which should be included in the health specialist study of the Environmental Impact Assessment and thus be regulated and monitor. Priorities should include hazards that are severe, affect large numbers of people or occur frequently.

IDENTIFYING POTENTIAL HEALTH IMPACTS

The Scoping Report should include the scope of the **health impacts** that need to be investigated in the Environmental Impact Assessment. Impacts, identified from the identification of hazards, should be those that have a significant likelihood of occurring and should provide links between the potential health impacts identified and the actual health impacts to be assessed. The Scoping Report should provide the method used

for identifying and prioritizing these impacts. A simple manner in which environmental health impacts can be prioritised is given in Box 5 below.

Box 5: Example of simple manner in which impacts could be priorities.

A simple and quick manner in which health impact and effects of a listed activity can be prioritized is to use a risk. The risk of any particular hazard can be defined as its probability multiplied by its consequence.

Risk = probability X consequence

The Probability is identified for example as 'Certain', 'Likely', 'Possible', 'Unlikely' and 'Rare'. The Consequences for can be defined as:

- Catastrophic - Deaths
- Critical - Multiple Severe Injuries or cases of illness
- Marginal - One Severe Injury or Multiple Minor Injuries
- Negligible - One Minor Injury

An example risk matrix is shown in Table 6.

Table 6: Example of a risk matrix used to determine the severity of a health risk of a health impacts.

Consequence	Negligible	Marginal	Critical	Catastrophic
Probability				
Certain	High	High	Extreme	Extreme
Likely	Moderate	High	High	Extreme
Possible	Low	Moderate	High	Extreme
Unlikely	Low	Low	Moderate	Extreme
Rare	Low	Low	Moderate	High

Each health impact is assessed for probability of occurrence as a result of the listed activity and the potential consequence of the impacts. The impacts can be placed in the relevant block in Table 6 to generate a Table similar to that of Table 7. Those impacts which fall in the extreme and high risk blocks, the pink-light orange blocks in Table 7, should be prioritized as important and should be included in the scope of study of the EHIA. Impacts will obviously be specific to the activity being assessed; we used an example of construction of a sewerage treatment-plant next to a large human settlement to show impacts in Table 7.

Table 7: Example of prioritising health impact using the construction of a sewage treatment plant within a large settlement as an example.

Consequence	Negligible	Marginal	Critical	Catastrophic
Probability				
Certain				
Likely	• Noise nuisance during construction	• decrease in diarrhoeal disease		
Possible	• increase diarrhoeal disease from spills			• Death due to a cholera outbreak
Unlikely	• Odour nuisance		• Typhoid outbreak without deaths	• Typhoid outbreak with deaths
Rare			• Injury during construction	• Death by drowning

The plan of study for an Environmental Impact Assessment should also provide the level of EHIA (rapid, intermediate, comprehensive) which will be used in the specialist study to assess health impacts in the Environmental Impact Assessment. A simple guideline for Environmental Health to assess the level of EHIA required in a specialist study is given in Table 4 above.

THE ENDPOINT OF THE SCOPING

The Environmental Assessment Practitioner submits the Scoping Report, with the plan of study, to the DWEA. DWEA should submit the entire Scoping Report, with the health plan of study, to Environmental Health. The Environmental Health should acknowledge receipt of the Scoping Report.

Environmental Health should review the health component of the Scoping Report. It is strongly recommended that the Environmental Health make use of a committee to conduct these reviews (see Box 6 below related to the setting up of a committee to conduct these evaluations). Environmental Health should base their decision regarding the application on whether:

- There are no major gaps in the issues that have been identified in the Scoping Report;
- other conceivable environmental hazards that were not identified or classified as significant
- There are any impacts which have not been identified in the Scoping Report; and
- The level of EHIA being recommended in the plan of study of the Scoping Report (see Table 4 above for guideline for deciding the level of EHIA required for the Environmental Impact Assessment). The Environmental Health should recommend a level of detail and effort for the Plan of Study for Environmental Impact Assessment that is proportional to the health risk.

Box 6: Setting up an EHIA committee for decision-making and assessment of EHIA within Environmental Impact Assessments.

Taken from UNSW, Health Impact Assessment: A Practical Guide.

Environmental Health should consider setting up an EHIA steering committee to oversee and provide direction to the EHIA. Establishing a steering committee, underpinned by a clear and transparent statement of values, is the core organising task of scoping. The EHIA steering committee should ensure:

- **Representation:** *Forming a steering committee involves balancing the need to make it small enough (a maximum of eight) to be manageable and making it large enough to include a diverse range of perspectives and expertise. Useful areas of expertise for the committee are: the proposal topic, the potential population(s) affected, community involvement, public health evidence and research, negotiation skills, policy analysis, equity issues and the social determinants of health.*
- **Chair:** *The Chair of the steering committee should be carefully selected. The Chair does not need to be a health professional but must be familiar with chairing high level and diverse steering committees, be respected, have the skills to deal with potential conflict between group members and be committed to the successful completion of the HIA.*
- **Values:** *Establishing the group's values and perspective on health early on in the proceedings of the steering committee helps to ensure that there is consensus on the scope of the impacts that will be assessed in the HIA. Key questions that need to be asked are: How will health be defined? What specific groups, communities or populations will be considered in terms of differential impacts? How will evidence be valued and evaluated? How will competing or conflicting evidence be reconciled? For example where community perceptions of an impact differ from discussions on the impact in literature. How will recommendations be made? What range of stakeholders will be consulted and how All major decisions will be considered and signed*

THE DECISION

The Environmental Health should, within 10 days, send their decision, with motivation, on whether the Scoping Report should be amended, re-considered, rejected or accepted. The DWEA then communicates to the Environmental Assessment Practitioner to request for amendments to the scoping report, or consideration of

further alternatives to the activity. If amendments or alternative consideration are requested, a revised Scoping Report or Plan of Study for the Environmental Impact Assessment must be re-submitted to DWEA. The DWEA then submits the revisions to Environmental Health and the review cycle is followed again.

The Environmental Health should review the Scoping Report using the Scoping Tool provided in Appendix 2. The scoping tool gives guidance on the decision-making at this stage. Based on the result of application of the Scoping Tool and the review of the Scoping Report, Environmental Health should provide DWEA with recommendations as to whether:

- the health plan of study in the Scoping Report adequately addresses health impacts;
- a health specialist assessment should be conducted and submitted with the Environmental Impact Report; or
- the level of EHIA that should be conducted.

Figure 6 shows the Scoping process for the Environmental Impact Assessment and the EHIA processes.

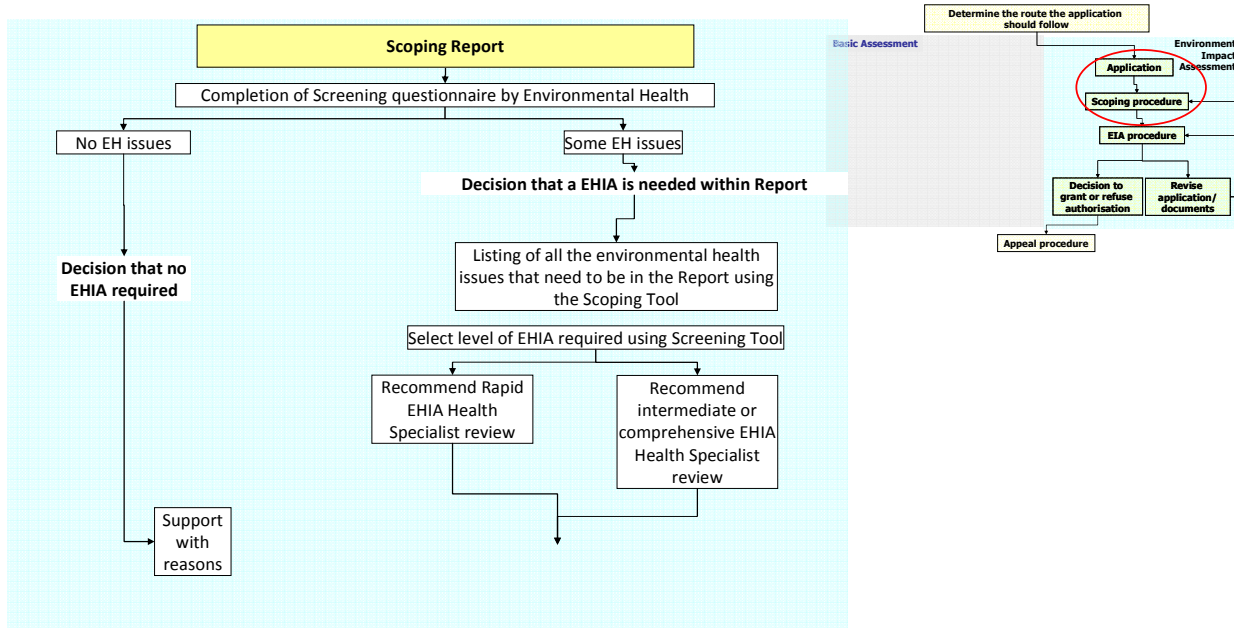


Figure 6: The diagram on the left is a flow diagram of application and scoping of the Environmental Impact Assessment and the EHIA screening and scoping process. Colour box reflects DWEA activity, while the clear boxes reflect the EHIA screening and scoping process and Environmental Health decisions. . The diagram on the right relates this stage of activities to the Environmental Impact Assessment procedure.

ROLES AND RESPONSIBILITIES OF ENVIRONMENTAL HEALTH

The role and responsibility of the Environmental Health is to:

- Acknowledge, in writing within a week, receipt from DWEA of the Scoping Report.
- For the Scoping Report, complete the scoping questionnaire, determine whether all health issues identified in the above set have been included, determine whether the correct level of EHIA is recommended.

- Submit, within 10 days, the decision, with motivation, on the Scoping Report.

STAGE 3 (ENVIRONMENTAL IMPACT ASSESSMENT)

PURPOSE OF THE ENVIRONMENTAL IMPACT ASSESSMENT STAGE OF THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS

When the DWEA accepts the scoping report and a plan of study for Environmental Impact Assessment, the Environmental Assessment Practitioner can proceed with the Environmental Impact Assessment²². The purpose of the Environmental Impact Assessment is to:

- address issues that have been raised during the scoping phase;
- assess alternatives to the proposed activity in a comparative manner;
- assess all identified impacts and determine the significance of each impact; and
- formulate mitigation measures, both engineering and non-engineering measures.

Public participation is also an essential part of the Environmental Impact Assessment process. During the Environmental Impact Assessment process, public participation is conducted in accordance with the plan of study for Environmental Impact Assessment as opposed to the minimum requirements set out in the Regulations²².

METHOD OF SPECIALIST HEALTH STUDIES IN THE EIR

Based on the plan of study for health issues highlighted in the Scoping Report, the EAP will commission the relevant health impacts studies. The health impact study will need to follow the requirements of other specialists studies on an Environmental Impact Assessment and will need to include, at least, those components shown in Box 7.

Box 7: Components of environmental health specialist report.

In accordance with the Environmental Impact Assessment Guidelines the Report, and thus the health specialist reports should include the following components:

1. Executive summary
2. Introduction
3. Description of the project
4. description of the environment
5. anticipated environmental and public health impacts and mitigation measures
6. alternatives
7. Monitoring and evaluation
8. Legal prescripts
9. Assessment tools
10. Health Risk Plan (part of the Environmental Management Plan)
11. Summary and conclusions

The health assessment of an Environmental Impact Assessment should put the human community as the central focus of the assessment. Since sectors of the community differ in their vulnerability, the health status and general composition of the population in relation to environmental health impacts should be included in these reports. This forms a basis for identifying positive health impacts associated with the activity and baseline data for monitoring the impact of the activity after implementation. Information that should be included, in a process referred to in EHIA literature as **profiling**, relates to the baseline health status of the population, levels of employment/unemployment, and environmental conditions of the population in question (e.g. ability to increase capacity related to water supply services), etc.

There are a number of methods and tools used within EHIA specialist studies to quantify health impacts, three of the most common being:

- **Comparative risk assessment (CRA):** Comparative risk assessment is a tool for comparing and ranking risk to human health and ecosystems and identifying strategies for managing this risk based on both scientific data and public value.
- **Risk assessment:** a systematic approach to quantify the burden of disease/injury resulting from major risk factors. A Risk Assessment is a process of estimating the potential impact of a chemical, biological, physical or social agent on a specified human population system under a specific set of conditions and for a certain timeframe²⁰. The aim of a risk assessment is to provide the best possible scientific, social and practical information about the risk, so that an informed decision may be made regarding the planned activity²⁰. See Box 8 for more details related to risk assessments in an occupational environment.
- **Cost benefit analysis:** building on the risk assessment work that quantifies the burden of disease, cost benefit analysis of interventions is undertaken to help identify interventions that will reduce burden of disease.

The EIR should indicate the measurability (estimates, qualitative or calculable)¹⁶ of the potential health impacts associated with the physical environment (e.g. waste, gaseous emissions, noise, dust, radiation, etc.) and individual lifestyles (e.g. smoking) in accordance with the Plan of Study for Environmental Impact Assessment. The risk of occurrence (definite, probable or speculative) should also be indicated.

Information on toxicology, human experience, environmental fate and exposure should be gathered, critiqued and interpreted and included in the EIR. The degree of certainty of the health impacts occurring as well as their anticipated frequency and severity should be indicated. This information will assist Environmental Health in decision-making.

Indicators that require monitoring need to be outlined. Parameters to be monitored and the correlation between these parameters and health impacts should be indicated.

Box 8: Example of manner in which risk, usually chemical or gaseous pollution, can be determined using risk characterization.

Most common health issues included in Environmental Impact Assessment relate to the toxic effects of pollution. In the context of industrialization, transport and traffic expansion and the construction of thermal power plants and dams, this type of impact has received a lot of attention and much is known about it. These assessments make use of risk characterization for a semi-quantitative risk evaluation. Risk characterisation includes 4 steps:

- Hazard identification (discussed above under scoping)
- Exposure-response assessment;
- Exposure assessment;
- Risk characterisation.

The term **exposure-response relationship** may be used to describe either a dose-response or a concentration-response, or other specific exposure conditions.

A **dose-response relationship** describes how the likelihood and severity of adverse health impacts (the responses) are related to the amount and condition of exposure to an agent (the dose provided). **Concentration-response relationship** related to studies where the exposure is to a concentration of the agent (e.g., airborne concentrations applied in inhalation exposure studies)²⁷.

Typically, as the exposure increases, the measured response also increases (See Figure 7). At low exposure there may be no response²⁷. At some level of exposure the responses begin to occur in a small fraction of the study population or at a low probability rate²⁷. Both the exposure at which response begin to appear and the rate at which it increases given increasing exposure can be variable between different pollutants, individuals, exposure routes, etc²⁷.

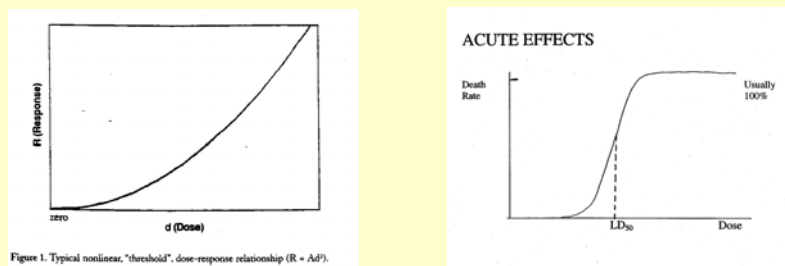


Figure 1. Typical nonlinear, "threshold", dose-response relationship ($R = Ad^2$).

Figure 7: Examples of a dose-response curves²⁸

The shape of the exposure-response relationship depends on the agent, the kind of response (tumor, incidence of disease, death, etc), and the experimental subject (human, animal) in question.

Exposure-response assessment is a two-step process²⁷. The first step is an assessment of all data that are available or can be gathered through experiments, in order to document the exposure-response relationship(s) over the range of observed exposures (i.e., the exposures that are reported in the data collected)²⁷. The second step consists of extrapolation to estimate the risk (probably of adverse impact) beyond the lower range of available observed data in order to make inferences about the critical region where the exposure level begins to cause the adverse impact in the human population.

The **exposure assessment** which follows the exposure-response assessment is the process of measuring or estimating the magnitude, frequency, and duration of human exposure to an agent in the environment, or estimating future exposures for an agent that has not yet been released²⁷.

Finally, the information from the proceeding steps are summarized and integrates to synthesize an overall conclusion about risk. A **risk characterization** conveys the risk assessor's judgment as to the nature and presence or absence of risks, along with information about how the risk was assessed, where assumptions and uncertainties still exist, and where policy choices will need to be made. Risk characterization takes place in both human health risk assessments and ecological risk assessments. The final, overall risk characterization thus consists of the individual risk characterizations plus an integrative analysis.

ASSESSMENT OF HEALTH IMPACTS

The quantifying of health impacts should be approached holistically. Both positive and negative health impacts should be considered. The assessment may be based on health-related guidelines (e.g. WHO air quality standards may be used to ensure that air emissions do not pose a serious risk to humans). In the absence of

guidelines, other methods of evaluation such as evidence from health experts may prove useful. The method used for assessment should efficiently address the health impact concerns raised in the scoping report. The predicted impacts should be ranked against the evidence base to flag the significant impacts.

HEALTH RISK MANAGEMENT

The final step in the EHIA is health risk/impact management. It consists of incorporating health safeguards and health mitigation measure in activity design, construction and operational. Safeguards entails proposing modifications to activity plans and operations and ensuring that capability exists for effective mitigation. Mitigation entails vigilant monitoring for the lifetime of the activity accompanied by appropriate and timely response to increasing health risk.

Impacts are often categorized as:

- insignificant, no effect, positive benefit;
- significant but mitigatable; and
- significant but not mitigatable.

Actions that need to be taken to mitigate negative impacts and maximize positive impacts should be identified in the EIR.

Compliance strategies that are linked to legislation (e.g. handling of a hazardous substance in accordance with the HSA) need to be outlined as part of hazard management. Communication of the risks (through a risk communication strategy) associated with an activity should form part of hazard management.

Description of feasible and non-feasible alternatives that would result in the prevention or control of health impacts should be included in this stage. The “no activity” option in terms of health impacts should be made clear.

THE ENDPOINT OF THE ENVIRONMENTAL IMPACT ASSESSMENT

After the different aspects of the assessment have been undertaken, including any health specialist studies and specialized processes, an Environmental Impact Assessment report is compiled, which must contain draft environmental management plan and should include a draft health risk management plan.

The Environmental Assessment Practitioner submits the EIR, to the DWEA. DWEA should submit the entire EIR to Environmental Health. The Environmental Health should acknowledge receipt of the EIR in writing.

Environmental Health should review the health component of the EIR.

The starting-point for any EIR review by Environmental Health should be the Plan of Study formulated in the Scoping Report. An inventory should be made of the items in the Plan of Study that are addressed in the EIR and those that are not. In the light of new information that will have emerged, the adequacy of the original Plan of Study should also be revisited. Three important areas need in-depth consideration in the review of the EHIA method and procedure (see Appendix 3 for EIR review tool):

1. **Objectivity** and bias, as functions of possible conflicts of interest, timing and availability of resources. Objectivity is the first prerequisite of any acceptable EHIA specialist report. It can be compromised by a number of issues: conflict of interest, timing, financial resources, access to information and procedural rigour.
2. The **quality of information** provided in the EHIA specialist study which is largely determined by access to information. There are many possible obstacles to obtaining all relevant information to arrive at balanced EHIA conclusions. One of the most important aspects of exploring the report's objectivity is to ensure it is sufficiently comprehensive and credible
3. Related to **rigour**, the first question to ask is whether all the important health hazards that could be associated with the project were identified. In considering the individual health hazards identified, it is important to verify the datasets that led to their identification. They should be recent and reliable. Next, the appraisal should ensure all vulnerable communities were included in the EHIA. The report should link identified hazards to vulnerable communities for the different stages of the project. Also, for each community it should describe in detail its various characteristics, and it should clarify how and to what extent changes in these characteristics, caused by the activity, translate into health impacts.

THE DECISION

The Environmental Health should, within 10 days, send their decision, with motivation, on whether the health section of the EIR should be amended, re-considered, rejected or accepted.

The consideration of the Environmental Impact Assessment report by DWEA occurs in two phases. In the first phase, the competent authority, after receipt of the Environmental Impact Assessment report, will make a decision to¹:

- accept the report;
- request amendments to be made to the report;
- refer the report for specialist review; or
- reject the Environmental Impact Assessment report because it does not contain the information required by the Regulations.

If amendments or alternative consideration are requested, a revised Environmental Impact Report must be re-submitted to DWEA.

The DWEA then submits the revisions to Environmental Health and the review cycle is followed again.

The second phase occurs after the competent authority has accepted an Environmental Impact Assessment report, or after receipt of the findings of a specialist reviewer. During this phase, the competent authority will make a decision to¹:

- grant all or part of the application; or

- Refuse all or part of the application.

Figure 8 shows the reporting stage of the Environmental Impact Assessment and the specialist reporting stage of the EHIA processes.

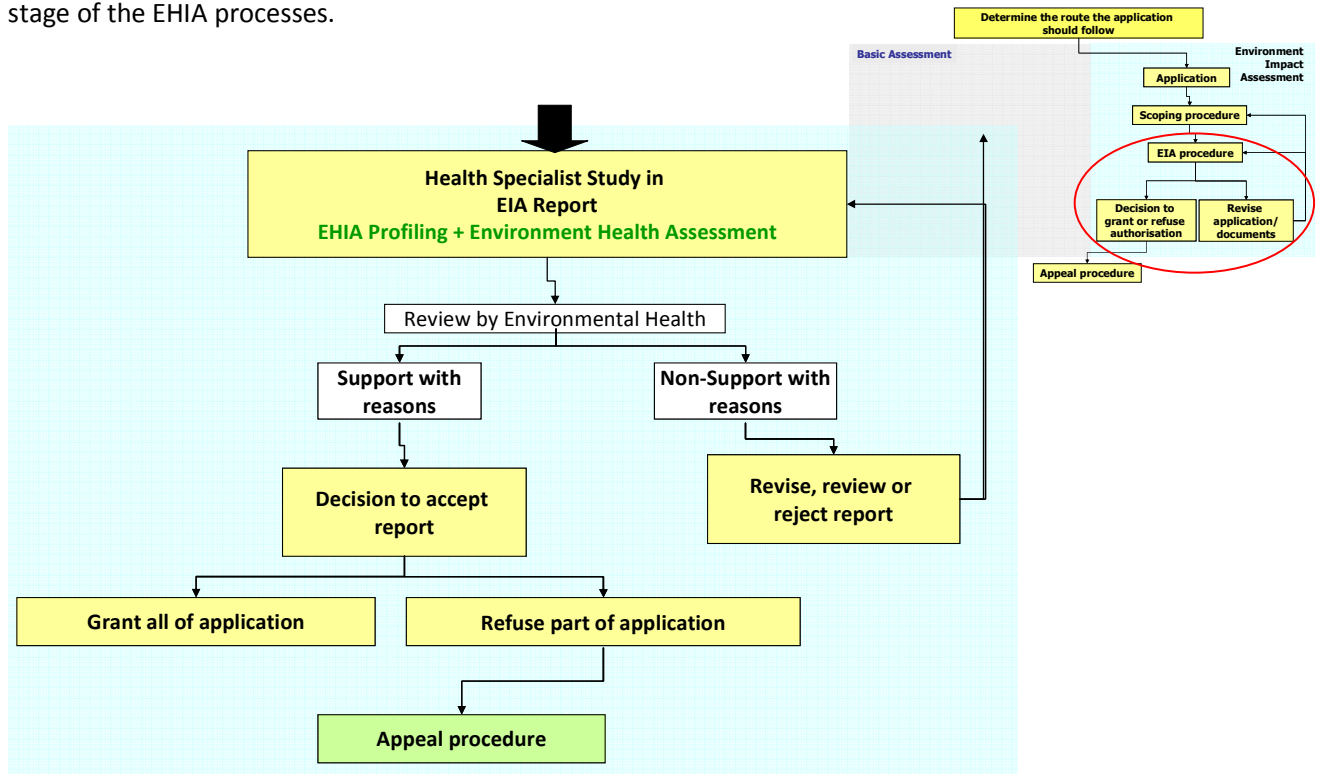


Figure 8: The diagram on the right is a flow diagram of reporting of the Environmental Impact Assessment and the EHIA specialist reporting process. Colour box reflects DWEA activity, while the clear boxes reflect the EHIA reporting process and Environmental Health decisions. The diagram on the right relates this stage of activities to the Environmental Impact Assessment procedure.

ROLES AND RESPONSIBILITIES OF ENVIRONMENTAL HEALTH

- The Environmental Health should acknowledge, with a week, receipt of the EIR.
- The Environmental Health should identify and consider different types of evidence from quantitative and qualitative sources. This could include published evidence and specific research findings.
- In cases of highly technical EHIA or when Environmental Health lacks the necessary expertise, Environmental Health should recommend a specialist review to Environmental Health and/or request further information from the applicant.
- The Environmental Health should recommend the inclusion of a risk communication strategy by the applicant/Environmental Assessment Practitioner where the public perception of the health risk is higher than the actual assessed risk.
- The Environmental Health should agree on or recommend relevant health monitoring indicators.
- The Environmental Health should recommend support or non-support to the proposed activity based on the EHIA.

- The Environmental Health should recommend the inclusion of specific conditions related to health impacts in the ROD.
- The Environmental Health should, within 10 days, communicate its decision to the DWEA in writing with reasons for the decision.
- Decisions made by Environmental Health need to incorporate monitoring mechanisms that are part of the EIR. The Environmental Health's support or non-support of activities should be communicated to the DWEA for a final decision as the lead authority in the Environmental Impact Assessment.

GUIDING PRINCIPLES REGARDING THE DECISION-MAKING FOR ALL STAGES OF AN EHIA

The objective of EHIA is to guide decision-making and it is important that the principles related to **sustainable development** be integrated into the process. Sustainable development is not an eco-centric concept, but takes social and economic considerations into account.

This guideline further uses the following principles:

- **Co-operative governance** is the over-arching principle because without it, potential health impacts may not be identified and managed prior to the implementation of activities that may have an adverse impact on health. Thus the guideline assumes this principle in all respects (e.g. a DWEA always consults when an application for a proposed activity is received). This document does not set out a particular process for consultation between the different organs of state.
- **Batho Pele** principles for service delivery in the Public Service.
- **Evidence-based decisions** and efficiency¹⁸ of environmental health services.
- **Harmonization** with the broader Environmental Impact Assessment process of the DWEA
- Consideration of the health of the affected communities and protection from identified activities.
- **Provision of factual information** generated through the EHIA process that should be made available to the affected communities.
- **A generic** process for EHIA.
- Protection and improvement of public health.
- **The precautionary principle** in cases where uncertainty prevails.

The assumption of responsibility for environmental safety and health, assurance of community well-being and empowerment, control of social, economic and environmental impacts, and intergovernmental co-ordination and harmonization of legislative processes are overarching goals of sustainable development and therefore guide the various stages that need to be incorporated into EHIA.

Summary of EHIA within the Environmental Impact Assessment Procedure

Figure 9 provides a summary flow diagram of the combined Environmental Impact Assessment and EHIA processes.

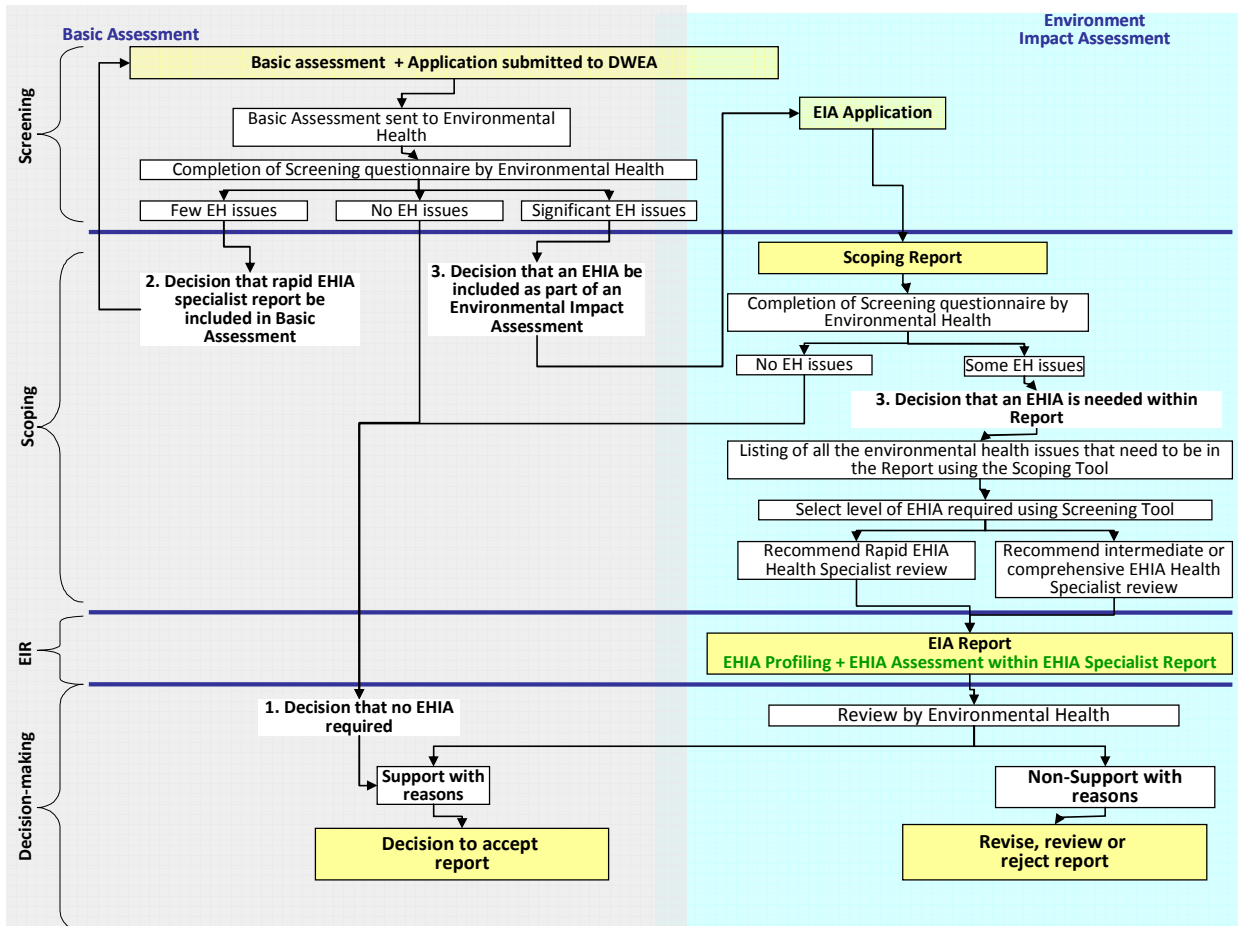


Figure 9: Process flow diagram for EHIA within the South African Environmental Impact Assessment Process. Block in yellow relates to the Environmental Impact Assessment, thus the DWEA responsibility. Clear blocks relate to the EHIA process, thus relating to municipal, provincial or national Environmental Health.

PART 3: MONITORING AND EVALUATION

Monitoring of the EHIA

Monitoring is defined as a continuing function that aims to provide the Environmental Health and other key stakeholders with early indications of progress or the lack thereof, or of ongoing interventions, and the achievement of results, goals, objectives or targets. A number of monitoring types can be included in EHIA; namely

1. **Health monitoring** which has the objective of detecting early warning of an increased health risk so that mitigation/corrective measure can be implemented. Health monitoring must be done to minimize negative impacts associated with implementation of the activity and to monitor the accuracy of predictions about potential impacts. Direct monitoring of health related to the activity may be expensive, unreliable, or unethical, as result proxy indicators may be needed i.e. water quality monitoring for water-borne disease or levels of pollutant emissions both of which would relate to human health²³. This type of monitoring focuses on monitoring the impact of the activity on the health of the community or individual.
2. **Compliance monitoring**, which focuses on adherence to the decisions made in the Record of Decision of the Environmental Impact Assessment. Compliance monitoring relates to monitoring compliance to the “Environmental Risk Management” section of the EIR. It may also relate to compliance of the activity to the ROD issued by the DWEA with the concurrence of Environmental Health. The applicant may be requested to compile a monitoring report in accordance with the approved EIR and to submit this report to Environmental Health quarterly, this could be included as part of the conditions in the ROD.
3. **Process monitoring** which is the monitoring of the application of the guidelines, and the level of inclusion of EHIA into the Environmental Impact Assessment process. Every Environmental Health section involved in the Environmental Impact Assessment process should compile and submit to National Environmental Health a quarterly report for all activities assessed through the EHIA process using this guideline (see Appendix 4). This will assist Environmental Health in identifying and subsequently addressing gaps, and to report on a number of compliance and process indicators.

Evaluation of the EHIA

The EHIA process should also be reviewed in terms of efficiency and improvement of the health outcomes of proposed activities.

The assessment of efficiency can be based on economics, considering whether a balance was struck between the costs and benefits with regard to health impacts. Issues such as administration should be included.

Evaluation is defined as a time-bound function that aims to systematically and objectively assess the relevance, efficiency, effectiveness, impact and sustainability of a policy, programme or project. The evaluation of outcomes and impacts provides evidence-based decision-making knowledge in support of policy, strategy and implementation adjustments. Evaluation does not form part of the guidelines, as evaluation relates to time-bound assessment at various stages of the implementation of an activity (development) (i.e. 6 monthly, annually, 5-yearly) and evaluates the impact of the activity against health indicators. Evaluations require baseline data against which the impacts of an activity can be measured. It is therefore, specific to the activity being implemented.

PART 4: TOOLS

APPENDIX 1: EHIA SCREENING TOOLS

Before using the Screening tool (Table 9), use Table 8 below to categories which environmental health determinants will be impacted on by the activity and to list associated health impacts. Completing the Screening Tool is only necessary if any of the health determinants will be affected by the list activity.

Table 8: Example of table to categories impacts on environmental health determinants and the resulting health impacts of a listed activity.

Environmental Health Determinants	List Possible Health Impacts
Indoor and outdoor air quality	
Noise	
Housing	
Water quality	
Water quantity	
Waste management	
Social environment	
Risk of injury	
Sun exposure	
Disease vectors and pests	
Communicable diseases	
Climate change	
Food safety	
Environmental pollution	
Occupational hazards	
Radiation	
Hazardous substance	

Table 9: Example of a screening checklist for EHIA

Bias towards full EHIA	To your knowledge	Bias towards rapid or no EHIA
	Emissions into the atmosphere	
Yes/not sure	Are there likely to be emissions that will impact on the air quality?	No
	Waste	
Yes/not sure	Are there likely to be wastewater discharges that will impact on the water quality or quantity of water resources that are used for domestic water supplies?	No
Yes/not sure	Are there likely to be impacts associated with solid wastes generated on the site of the proposed activity?	No
	Chemicals	
Yes/not sure	Are there likely to be health impacts associated with chemicals or hazardous substances, as defined in the Hazardous Substance Act, on the site of the proposed activity?	No
	Occupational	
Yes/not sure	Are there likely to be health impacts associated with occupational health and safety? (e.g. will workers be exposed to hazardous product and processes?)	No
Yes/not sure	Is the activity likely to generate significant noise, traffic flows or risk of injury to workers?	No
	Health impacts	
Yes/not sure	Does the activity affect environmental health directly (see Table 1 for determinants of environmental health)?	No
Yes/not sure	Does the activity affect environmental health indirectly?	No
Yes/not sure	Are there any potentially serious negative health impacts/effects that you currently know of?	No
Yes/not sure	Is further investigation necessary because more information is required on the potential health impacts?	No
	Community	
Yes/not sure	Is the population affected by the activity large (>100 people)?	No
Yes/not sure	Are there any social excluded, vulnerable, disadvantaged groups likely to be affected by the activity?	No
Yes/not sure	Is the development likely to result in any unplanned settlement (e.g. a informal settlement) or likely to impact on houses/homes in the immediate area?	No
Yes/not sure	Are the interest and affected community concerned about potential health impacts?	No
	Evidence-based decision and mitigation	
No/not sure	Is scientific evidence or experience-base information available to support the appraisal and assessment of health impacts? (i.e. is data already available to assess health impacts (rapid EHIA) or does new data have to be collected to determine impacts (intermediate/comprehensive EHIA)?)	Yes
No/not sure	Is it possible to easily suggest effective way to minimise harmful effects? (i.e. are mitigation options fairly obvious or is there an evidence-base to determine these mitigation options e.g. scientific document/previous health studies?)	Yes
No/not sure	If allowed to occur, could the potential negative health impacts be easily reversed/mitigated?	Yes
For =		Against =
If the 'for' and 'against' scores are similar, used the environmental health impacts list in Table 2 above. If one of the environmental health impacts/issues/concerns are on this list, an EHIA should be recommended.		

Comments: Proposed activity likely to have **significant/non-significant** environmental health impacts.

I recommend that the proposed activity **undergo no EHIA/rapid EHIA for a Basic Assessment/intermediate or comprehensive EHIA**

.....
Responsible EHP **Date**

.....
Approved by EH Director/Manager **Date**

APPENDIX 2: SCOPING TOOL

Table 10: Checklist about issues that need to form part of the scoping phase

Nature of hazard	Type of hazard	Physical effect	Source / location	Identified potential problem (Yes/No)	Relevant allocation of significance (Yes/No)
Chemical	As listed in the HSA and its regulations	Obtainable from toxicological data	Relevant to the proposed activity		
	Chemicals related to water quality	Obtainable from SA Water Quality Guidelines	Relevant to the proposed activity		
	Chemicals related to air quality	Obtainable from toxicological data	Relevant to the proposed activity		
Physical	Machinery and noise	Physical and ear injuries	All machinery		
	Particulate matter	Irritant	Relevant to the proposed activity		
	Steam and heat	Burns	Relevant to the proposed activity		
Biological					
Particles	Wood dust	Carcinogen (nasal cancer) ¹⁴	Relevant to the proposed activity		
Other issues					

Comments: The issues related to health impacts have **been/not been** adequately identified and listed in the Scoping Report and have been **satisfactorily/not satisfactorily** assigned their significance to public health.

I recommend that the following significant issues, as identified by the Environmental Health, be included as part of the EIR and furthermore that the significance of the following identified issues be considered to be important.

.....

Responsible EHP

.....

Date

.....

Approved by EH Director/Manager

.....

Date

APPENDIX 3: EIR REVIEW TOOL

Table 11 below provides a tool to review the EHIA which was a specialist report included in an environmental Impact Assessment.

Review area	Reviewer's Comments	Yes	No	Uncertainty
A. Objectivity				
1. Does the specialist have the necessary qualification, expertise and experience, to provide inputs to the EHIA process?				
2. Is there any evidence of unethical behaviour? e.g. bias or inappropriate emphasis, unwarranted assumptions, emotive, irrational or unsubstantiated statements, vested or conflict of interest?				
B. Quality of information				
1. Is the detail of information sufficient for the decision-maker to make a decision?				
2. Are the findings sufficiently reliable the decision-maker to make a decision?				
3. Has the specialist met all the requirements of the Terms of Reference for the health specialist inputs? e.g. have all the prioritised health impacts, highlighted in the scoping report, been addressed?				
4. When information from external sources has been introduced, has a full reference to the source been included?				
5. Is the report readable and understandable? (i.e. is the language clear, explaining any discipline-specific or specialised terms?)				
6. Does the report deliver what was required by the ToR? (i.e. are the issues, concerns and impacts mentioned in the Plan of Study adequately covered?)				
C. Rigour of Report				
1. Does the EHIA contain a brief but concise non-technical summary that clearly explains the project and the health environment, the main issues and mitigation measure to be undertaken?				
2. Does the report clearly explain the method used?				
3. Are the sources of information clear and explicit?				
4. Are options or statements justified and adequately motivated?				
5. Are conclusions derived from the findings of the study logically consistent?				
6. Is a summary impact assessment table included, using the defined impact assessment and significance rating criteria to evaluate different alternatives both with and without management actions?				
7. Are the consequences of the predicted health impacts made explicit?				
8. Is a statement of impact significance provided for each health issue, specifying whether thresholds of significance have been exceeded or not, and whether or not the impact presents a potential fatal flaw?				
9. Is there a clear indication of whether health impacts are irreversible or result in a loss of life?				
10. Are key risks and uncertainties that may influence the health impact assessment finding clearly specified? (i.e. does the report indicate what data are inadequate or absent?)				
11. Are there any uncertainties, or low levels of confidence in the assessment or evaluation?				
12. If yes, are these uncertainties and confidence levels clearly stated?				
13. Are the assumptions in the approach and method, assessment, evaluation and management options sound?				
14. Is the degree of confidence in the health impact assessment prediction clearly specified?				

Review area	Reviewer's Comments	Yes	No	Unsure
15. Is a summary of key management actions that fundamentally affect the health impact significance provided?				
D. Considerations of alternatives				
1. Has adequate consideration been given to the identification of reasonable alternatives for the activity?				
2. Have alternatives been addressed at a scale and level of detail that enables adequate comparison with the proposed activity?				
3. Has the specialist identified that alternative that is the best practicable environmental options from the perspective of environmental health?				
E. Participation in the EHIA				
1. Did the EHIA process include genuine stakeholder consultation?				
2. If so, were I&APs included in the consultation?				
3. Have the views, issues and concerns of stakeholders been meaningfully incorporated into the findings of the EHIA?				
F. Impacts				
1. Have direct and indirect environmental health impacts of the activity been clearly explained?				
2. Is the investigation of each type of environmental health impacts appropriate to its importance for the decision?				
3. Are cumulative environmental health impacts considered?				
4. Has consideration been given to environmental health impacts which might arise from non-standards operating conditions? (i.e. health and safety impacts resulting from equipment failure, unusual environmental conditions such as flooding), accidents and emergencies?				
5. Has the timescale over which the health impacts will occur been predicted such that it is clear whether impacts are short, medium or long-term, temporary or permanent, reversible or irreversible?				
6. Does the EHIA give a clear indication of which impacts may be significant and which may not?				
G. Mitigation				
1. Has the mitigation of negative impacts been considered and where feasible, have specific measures been proposed to address each impact?				
H. Monitoring				
1. Has the EHIA proposed practical monitoring arrangements to check the environmental impacts resulting from the implementation of the activity?				
2. Has the EHIA proposed limits of acceptable change that the developer can use to track impacts and trigger management interventions?				

Comments:

.....

Responsible EHP

.....

Date

.....

Approved by EH Director/Manager

.....

Date

APPENDIX 4: MONITORING TOOLS

Please complete this form after every quarter, for report and record purposes.

DEPARTMENT OF HEALTH ENVIRONMENTAL HEALTH DIRECTORATE	
QUARTERLY REPORT EHIA GUIDELINE MONITORING AND EVALUATION TOOL	
Quarterly period	
Province/Municipality	
Officer(s)	
File no(s)	
QUESTIONS RELATED TO THE EIA PROCESS	
Documents processed:	
1. No. of EIA Basic Assessment+application documents received from the DWEA	
2. No. of EIA Scoping documents received from the DWEA	
3. No. of EIA Report documents received from the DWEA	
Decisions:	
4. No. of EIA Basic Assessments referred by Environmental Health for health specialist studies	
5. No. of Basic Assessments not issued with positive ROD from the DWEA because of the Environmental Health's decision	
6. No. of Basic Assessments that were given positive ROD from the DWEA and that included environmental health monitoring conditions from Environmental Health	
7. No. of EIA scoping reports referred by Environmental Health for health specialist studies (intermediate or comprehensive EHIA)	
8. No. of EIA Reports not issued with positive ROD from the DWEA because of the Environmental Health's decision	
9. No. of EIA Reports that were given positive ROD from the DWEA and that included environmental health monitoring conditions from Environmental Health	
10. No. of ROD issued by DWEA that concurrence with the Environmental Health's decision-making regarding the activity	
11. Actions of the Environmental Health in cases of non-concurrence in 10 above	
QUESTIONS RELATED TO THE EIA PROCESS	
Decision using the guidelines:	
12. No. of EIA Basic Assessment+application assessed and decisions made using the screening tools in the guidelines?	
13. No. of EIA Scoping assessed and decisions made using the scoping tool in the guidelines?	
14. No. of EIA Report assessed and decisions made using the evaluation tool in the guidelines?	
15. If the guideline tools were not used in a decision, why?	
16. General problems experienced with implementation of the guideline (e.g. administration issues)	
17. Was the guideline helpful in all of these projects? Please elaborate and make suggestions	

APPENDIX 5: OTHER ACTS AND REGULATIONS THAT HAVE AN IMPACT ON ENVIRONMENTAL HEALTH

Act and regulations	Administered by:	Provision for:-	Comments with regard to impact on environmental health
Atmospheric Pollution Prevention Act (Act. 45 of 1965)	DWEA	To provide for the prevention of pollution of the atmosphere, for the establishment of a National Air Pollution Advisory Committee, and for matters incidental thereto.	Hazardous substances associated with air pollution affect human health. This Act has identified some of the activities for which authorization for emissions is required from the DEAT.
National Environmental Management: Air Quality Act (Act. 39 of 2004)	DWEA	To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto.	The AQA represents a distinct shift from exclusively source-based air pollution control to holistic and integrated effects-based air quality management. It focuses on the adverse impacts of air pollution on the ambient environment and sets standards to control ambient air quality levels. At the same time it sets emission standards to minimise the amount of pollution that enters the environment.
Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act . 36 of 1947)	NDA&RD	To provide for the appointment of a Registrar of Fertilizers, Farm Feeds, Agricultural Remedies, Sterilizing Plants and Pest Control Operators; to regulate or prohibit the importation, sale, acquisition, disposal or use of fertilizers, farm feeds and agricultural remedies; to provide for the designation of technical advisors and analysts.	Fertilizers are beneficial to plants. They may also result in water pollution owing to surface run-off. This may result in nutrient-rich water resources promoting eutrophication, e.g. algal formation.
Foodstuffs, Cosmetics and Disinfectants Act (Act 54 of 1972) Regulations: R494; R495; R496	DoH	To control the sale, manufacture and importation of foodstuffs, cosmetics and disinfectants.	Food is a prerequisite for human life. There are many factors that affect the quality of food, such as food preservation, storage, preparation, etc.
Hazardous Substances Act (Act. 15 of 1973)	DoH	To provide for the control of substances that may cause injury or ill-health to or the death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature, of the generation of pressure thereby in certain circumstances, disposal or dumping of such substances and products.	Improper management hazardous substances may result in adverse health effects if people are exposed to these substances. The indication of the presence of these substances as specified by the Act may inform a risk assessment and risk management approach for activities that involve storing, using, manufacturing, etc. as part of the EHIA.
Health Act (Act 61 of 2003)	DoH	To provide for measures for the promotion of the health of the inhabitants of the Republic; to that end to provide for the rendering of health services; to define the duties, powers and responsibilities of certain authorities that render health services in the Republic; to provide for the co-ordination of such health services.	Any activity that gives rise to offensive/injurious conditions or is dangerous to health (e.g. accumulation of refuse) may have a negative impact on health and thus warrants being assessed in the EHIA.
International Health Regulations (1969)	DoH	To ensure maximum security against the international spread of diseases with a minimum of interference with world traffic.	Proposed activities on international boundaries should comply with this legislation. There are health measures and procedures that are applicable to ports and airports.
Meat Safety Act (Act 40 of 2000)	DAFF	To provide for measures to promote meat safety and the safety of animal products; to establish and maintain essential national standards in respect of abattoirs; to regulate the importation and exportation of meat; to establish meat safety schemes; to provide for matters connected therewith.	Proposed abattoir industries need to comply with this Act, which includes prescribed hygiene management and evaluation systems for the prevention of adverse health effects associated with abattoirs that do not comply with this Act.
Mine Health and Safety Act (Act.29 of 1996)	Dept. Minerals	To provide for protection of the health and for the safety of employees and other persons at mines and for that purpose amongst others to regulate employers' and employee's duties to identify hazards and to eliminate, control and minimize the risk to health and safety.	Hazard identification and risk assessments should be conducted by every manager for the protection of the health of persons directly affected by mine activities.

Act and regulations	Administered by:	Provision for:-	Comments with regard to impact on environmental health
National Water Act (Act 36 of 1998)	DWEA	To provide for fundamental reform of the law relating to water resources.	The quality of water in domestic water sources impacts on human health. The Act provides for the protection of water quality for the benefit of human health and aquatic ecosystems through the concept of the reserve determination process.
Occupational Health and Safety Act (Act 85 of 1993) Regulations: R1248	DOL	To provide for the health and safety of persons at work and of persons in connection with the use of plant and machinery and for the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety.	It is important to identify occupational health hazards related to substances that are produced, processed, used, handled, stored or transported or any plant or machinery. Hazard management measures should be put in place to mitigate potential negative impacts.
Water Services Act (No. 108 of 1998)	DWEA	To provide for the rights of access to basic water supply and basic sanitation; to provide for the setting of national standards and norms and standards for tariffs.	Water services (water supply services and sanitation services) may impact on human health. Water service providers have an important role to play in this regard. Proposed activities may involve industrial use of water, which is covered under section 7 of this Act.
Genetically Modified Organisms Act (Act 15 of 1997)	NDA&RD	To provide for measures to promote the responsible development, production, use and application of genetically modified organisms; to ensure that all activities involving the use of genetically modified organisms (including importation, production, release and distribution) are carried out in such a way as to limit possible harmful consequences to the environment; to give attention to the prevention of accidents and the effective management of waste; to establish common measures for the evaluation and reduction of the potential risks arising out of activities involving the use of genetically modified organisms; to lay down the necessary requirements and criteria for risk assessments; to establish a council for genetically modified organisms; to ensure that genetically modified organisms are appropriate and do not present a hazard to the environment; and to establish appropriate procedures for the notification of specific activities involving the use of genetically modified organisms.	
National Environmental Management: Waste Act (Act 59 of 2008)	DWEA	To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.	The objects of (his Act are to protect health, well-being and the environment; to ensure that people are aware of the impact of waste on their health, well-being and the environment; to provide for compliance with the measures set out in the Act and to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being.

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