DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 6759 **24 October 2025**

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998
(ACT NO. 107 OF 1998)

CONSULTATION ON THE PUBLICATION OF THE NATIONAL GUIDELINE FOR THE CONSIDERATION OF CLIMATE CHANGE IMPLICATIONS IN APPLICATIONS FOR ENVIRONMENTAL AUTHORISATIONS, ATMOSPHERIC EMISSION LICENSES AND WASTE MANAGEMENT LICENSES, FOR A SECOND ROUND OF PUBLIC COMMENT

I, Dion Travers George, Minister of Forestry, Fisheries and the Environment, hereby in terms of section 24J of the National Environmental Management Act, 1998 (Act No. 107 of 1998), give notice of my publication of the National Guideline for the consideration of climate change implications in applications for environmental authorisations, atmospheric emission licenses and waste management licenses, as set out in the Schedule hereto.

This Notice contains a revised version of the documents contained in Government Notice R.559 of Government *Gazette* No.47761, published on 25 June 2021, for public comment, and reflects the incorporation of amendments made, based on the first call for public comment.

Members of the public are invited to submit written representations or objections, within 30 days from the date of publication of this notice in the Government *Gazette* or in the newspaper, whichever is the later date, to any of the following addresses:

By post to: Department of Forestry, Fisheries and the Environment
The Director-General
Attention: Mr Simon Moganetsi
Private Bag X447
PRETORIA
0001

By hand at: Reception, Environment House, 473 Steve Biko Road, Arcadia, Pretoria.

By e-mail: SMoganetsi@dffe.gov.za

Any inquiries in connection with the Notice can be directed to Mr Simon Moganetsi by phone at 012 399 9309 or by mail at SMoganetsi@dffe.gov.za.

A hard copy of any notice or documents associated with this Government *Gazette* can be requested from Ms. M Moilwa at email: mmoilwa@dffe.gov.za or collected at the Department's physical address as

indicated above. The Government Notice can be downloaded from the Department's website at https://www.dffe.gov.za/legislation/gazetted_notices

The Department of Forestry, Fisheries and the Environment complies with the Protection of Personal Information Act, 2013 (Act No. 4 of 2013). Comments received and responses thereto are collated into a comments and response report which will be made available to the public as part of the consultation process. If a commenting party has any objection to his or her name, or the name of the represented company/ organisation, being made publicly available in the comments and responses report, such objection should be highlighted in bold as part of the comments submitted in response to this Government Notice.

Comments or input received after the closing date may not be considered.

DR D T GEORGE
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

SCHEDULE

NATIONAL GUIDELINE FOR THE CONSIDERATION OF CLIMATE CHANGE IMPLICATIONS IN APPLICATIONS FOR ENVIRONMENTAL AUTHORISATIONS, ATMOSPHERIC EMISSION LICENSES AND WASTE MANAGEMENT LICENSES

issued under section 24J of the National Environmental Management Act,1998 (Act No. 107 of 1998)

2025

Preface

This Guideline is published in terms of section 24J of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and must therefore be read together with the provisions of NEMA and specific environmental management Acts (SEMAs), including the national environmental management principles in section 2 of NEMA, as well as the Environmental Impact Assessment Regulations, 2014 (EIA Regulations) and other Guidelines published related to climate change. It is of importance that the Guideline must be read in the context of the mitigation hierarchy provided for in sections 2(4)(a)(ii) and 23(2)(b) of NEMA, read with the Climate Change Act, 2024 (Act No. 22 of 2024).

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ABBREVIATIONS AND ACRONYMS

AEL	atmospheric emission license
BA	basic assessment
CC Act	Climate Change Act, 2024 (Act No. 22 of 2024)
DFFE	Department of Forestry, Fisheries and the Environment
EA	environmental authorisation
EAP	environmental assessment practitioner
EIA	environmental impact assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014, as amended
EMPr	environmental management programme
GHG	greenhouse gas
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
S&EIR	scoping and environmental impact reporting process
SEMA	specific environmental management Act
ToR	terms of reference
WML	waste management license

DEFINITIONS

In this Guideline, unless expressly provided otherwise, or if the context provides otherwise, a word or expression to which a meaning has been assigned in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (**NEMA**), the Environmental Impact Assessment Regulations, 2014 (**EIA Regulations**), the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (**NEMWA**), the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (**NEMAQA**) or the Climate Change Act, 2024 (Act No. 22 of 2024) (**CC Act**), has the same meaning, and –

"adaptation" has the meaning assigned to it in section 1 of the CC Act;

"applicant" means a person who has submitted an application for an environmental authorisation, waste management license, or atmospheric emission license to the competent authority or licensing authority and has paid the prescribed fee;

"assessment" means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to decision-making;

"atmospheric emission license" has the meaning assigned to it in section 1 of the NEMAQA;

"carbon footprint" means the total amount of greenhouse gas emissions caused by a person;

"carbon sink" has the meaning assigned to it in section 1 of the CC Act;

"climate change" has the meaning assigned to it in section 1 of the CC Act;

"development" means any activity that requires an authorisation or license in terms of NEMA, NEMWA or NEMAQA;

"direct greenhouse gas emissions" has the meaning assigned to it in section 1 of the CC Act;

"emission sources" means any process or activity which releases a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere;

"greenhouse gas (GHG)" has the meaning assigned to it in section 1 of the CC Act;

"GHG emissions" has the meaning assigned to it in regulation 1 of the National Greenhouse Gas Emission Reporting Regulations, 2017, published in Government Notice No. 275 in Government *Gazette* No. 40762 of 3 April 2017, published in terms of NEMAQA;

"impact" includes direct impact, indirect impact and cumulative impact;

"indirect greenhouse gas emissions" has the meaning assigned to it in section 1 of the CC Act;

"inductive probability" means an estimate based on the available information and strength of evidence;

"licensing authority" has the meaning assigned to it in section 1 of NEMWA and section 1 of NEMAQA, respectively;

"listed activity" means an activity identified in terms of section 24(2)(a) and (d) of NEMA requiring an environmental authorisation; listed in terms of section 21 of the NEMAQA requiring an atmospheric emissions license; or listed in terms of section 19 of the NEMWA requiring a waste management license;

"mitigation" has the meaning assigned to it in section 1 of the CC Act;

"mitigation measure" has the meaning assigned to it in the National Pollution Prevention Plan Regulations, 2016, published in Government Notice No. 712 in Government *Gazette* No. 40996 of 21 July 2017;

"proponent" means a person intending to submit an application for an environmental authorisation, atmospheric emission license or waste management license and is referred to as an applicant once such application has been submitted;

"resilience" has the meaning assigned to it in section 1 of the CC Act;

"significant impact" has the meaning assigned to it in the EIA Regulations;

"sector" has the meaning assigned to it in section 1 of the CC Act;

"specialist" means a person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies;

"specified activity" means an activity as specified within a listed geographical area in terms of section 24(2)(b) and (c) of NEMA;

"statistical probability" means information where all uncertainties are accounted for;

"stranded assets" means developments or projects that fail to deliver adequate financial returns due to changing circumstances;

"transition risks" means the risk that the value of assets and income are less than anticipated due to policy changes (especially climate change policies) and market transformations, including the transition away from fossil fuels; and

"waste management license" has the meaning assigned to it in section 1 of NEMWA.

1 INTRODUCTION

The purpose of this document is to provide guidance to proponents/applicants of development projects, for purposes of integrating climate change and its implications into the earliest stages of development planning for a project to be assessed in terms of National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) (NEMWA), read with the Environmental Impact Assessment Regulations, 2014 (EIA Regulations), and/or the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) (NEMAQA). This Guideline specifies the nature, scope and extent of the information to be considered and included as part of the application process; and provides guidance and general instruction on the minimum requirements to consider when undertaking a climate change impact assessment, which forms part of an application for environmental authorisation (EA), an atmospheric emission license (AEL) and/or a waste management license (WML). Furthermore, the Guideline outlines the information that must be included in any such application process to assist the authorities with determining the minimum information required to enable an informed decision on applications for EA, AEL and WML.

The competent and licensing authorities recognize the importance of integrating climate change and its implications into the earliest stages of development planning. The consistent consideration of climate change in environmental impact assessments (EIA) will increase attention to, and awareness of, greenhouse gas (GHG) emissions, and will stimulate consideration of less emission intensive ways to realize developments.

The consideration of climate change implications as part of the EIA process, must therefore determine:

a) The potential impact of climate change on aspects of the environment likely to be significantly affected by the proposed development, including, in particular, fauna, flora, terrestrial and aquatic systems, archaeological heritage, landscape, and whether the impact is negative or positive;
b) The potential alternatives to the proposed development: alternatives that will have less impact on climate change (environment and generation of waste included), the society and economy and proposed development alternatives that will be least affected by climate change;
c) Climate risk assessment on infrastructure within the development processes;
d) Measures to improve water resources and sanitation management through reduction of non-revenue water resources, including forestry;
e) Whether, and to what extent, the proposed development will result in the release of GHG emissions;

f) Whether the proposed development is necessary to achieve long-term decarbonisation goals;
g) The impact of the development on the social, economic, natural and built environment that are crucial for climate change adaptation and resilience;
h) The proposed project's implications to South Africa's international obligations;
i) The projected impact of climate change on the proposed development; and
j) Whether, and to what extent, the impacts and implications can be mitigated.

While there are already some efforts being made to consider the implications of climate change in EIAs, this Guideline provides a consistent approach for all role players (e.g., proponents, applicants, EAPs, specialists and authorities) on when and how to integrate and address climate change implications during the EIA process. Furthermore, this Guideline provides an approach for the undertaking of a climate change assessment, as part of an application for EA.

Recent case law reiterates and substantiates the fact that climate change implications are an inseparable part of the environment, and that climate change is a relevant consideration in EA, WML, and AEL application processes, both from a climate change mitigation and climate change adaptation perspective[1].

2 LEGAL CONTEXT

The relevant laws and policies for the purposes of this Guideline are the NEMA, NEMAQA, NEMWA, the CC Act, and the National Climate Change Response White Paper[2]. These laws and the policy must be read in the context of section 24 of the Constitution of the Republic of South Africa, 1996 (the Constitution) which gives everyone the right to-

a) an environment that is not harmful to their health or well-being; and
b) have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
    i) prevent pollution and ecological degradation;

[1] Earthlife Africa Johannesburg v Minister of Environmental Affairs and others [2017] 2 All SA 519 (GP), para 78- 79, The Trustees of the Groundwork Trust v Acting Director-General: Department of Water and Sanitation and Others (2020) WT02/18/ MP, para 20.
[2] Department of Environmental Affairs. National Climate Change Response Plan White Paper, 2011. The White Paper sets out South Africa's climate change response strategy to achieve the National Climate Change Response Objective in a manner consistent with the outlined principles and approach and which is structured around the following strategic priorities: risk reduction and management; mitigation actions with significant outcomes; sectoral responses; policy and regulatory alignment; **informed decision making and planning**; integrated planning; technology research, development and innovation; facilitated behaviour change; behaviour change through choice; and resource mobilisation. This Guideline aims to provide for informed decision making on applications for environmental authorisation, waste management license and atmospheric emission license processes, taking into consideration the national and international obligations of South Africa with regard to climate change. As with the White Paper, emphasis is also placed on mitigation and adaptation.

ii) promote conservation; and

iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

This Guideline has also incorporated relevant international legal mechanisms that are binding on South Africa, most notably the United Nations Framework Convention on Climate Change (UNFCCC) and the agreements made under that Framework Convention. These include the Paris[3] Agreement under which countries agreed to "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change". Article 4 of the Paris Agreement requires countries that are parties to this Agreement to prepare and communicate their Nationally Determined Contributions (NDCs).

These countries must also report on their compliance with the Paris Agreement's obligations, including progress on implementing and achieving the NDCs. The NDCs of the country parties presents their global effort to "reach global peaking of GHG emissions as soon as possible, recognizing that peaking will take longer for developing countries, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.". Moreover, South Africa has promulgated legislation specifically pertaining to climate change, namely the CC Act.

NEMA and the SEMAs provide for an integrated environmental management system in terms of which EAs are required for NEMA listed and specified activities and licenses for the NEMWA and NEMAQA listed activities. The NEMA listed or specified activities are contained in Listing Notices 1 – 3 of the EIA Regulations, published in terms of NEMA. Furthermore, Notices under NEMAQA and NEMWA contain listed activities requiring AELs and WMLs, respectively. The process to be followed for EA applications is prescribed in the EIA Regulations. In terms of the EIA Regulations and the Listing Notices, a basic assessments (BA) process must be undertaken as part of an EA application to commence with the activities identified in Listing Notices 1 and 3 and a scoping and environmental impact reporting (S&EIR) process must be undertaken as part of EA applications to commence with activities identified in Listing Notice 2. Importantly, for the purposes of this Guideline, the EIA Regulations make provision for the

[3] Paris Agreement to the United Nations Framework Convention on Climate Change, Dec. 12, 2015, T.I.A.S. No. 16-1104.

submission of specialist reports under certain circumstances. NEMA also requires the submission of an environmental management programme (EMPr) for approval by a competent authority.

NEMWA makes provision for the listing of waste management activities that have, or are likely to have, a detrimental effect on the environment. Such a list has been published by the Minister[4]. The activities identified as Category A and B activities may not be undertaken without a WML, unless waste streams or portions of waste streams have been excluded from the definition of a waste stream in terms of the Waste Exclusion Regulations, 2018[5]. Applications for a WML to undertake a Category A activity require the submission of a BA report as contemplated in the EIA Regulations, and applications for a WML for an activity identified as a Category B activity require the submission of a scoping and EIA report. An environmental management programme and, where required, specialist reports are also required to be submitted as part of the BA or S&EIR process for a WML, as contemplated in the EIA Regulations.

NEMAQA makes provision for the listing of activities that result in atmospheric emissions, which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage. Such a list has been published by the Minister[6]. An AEL is required before the activities identified in that list can be undertaken. Although an application for an AEL is provided for separately from an application for an EA, the information provided through the NEMA EA process is integrally linked to the AEL process and must be considered as part of the AEL process. The licensing process requirements contained in the NEMAQA interface with the process in the EIA Regulations and air quality impact assessment reports generally form part of the EA process.

In terms of section 39(b) of NEMAQA, the licensing authority must take into account the pollution being or likely to be caused by the carrying out of the activity applied for and the effect or likely effect of that pollution on the environment, including health, social conditions, economic conditions, cultural heritage and ambient air quality. It is, therefore, necessary for the EA decision, including the air quality impact assessment report, to have been completed prior to the decision on the AEL application being made by the licensing authority. Section 40 (2)(c) of NEMAQA requires that any decision to grant an AEL must be consistent with, amongst other things, any environmental impact assessment done and the decision taken on an application for an EA. In terms of section 40(3) of NEMAQA, the AEL licensing authority must furthermore make its decision within 60 days of the date on which the EA decision was made.

[4] Government Notice No. 921 in Government *Gazette* No. 37083 of 29 November 2013, as amended.
[5] Government Notice No. 715 in Government *Gazette* No. 41777 of 18 July 2018.
[6] The most recent list was published in Government Notice No. 893 in Government *Gazette* No. 37054 dated 22 November 2013.

The provisions of the CC Act also need to be considered. Section 26(1) requires the Minister to, by notice in the *Gazette*, publish a list of greenhouse gases which the Minister reasonably believes cause or are likely to cause or contribute to climate change.

Once it has been put into effect, section 26(2) would provide for the Minister, by notice in the *Gazette*, to publish a list of activities which emit, or have the potential to emit, one or more of the greenhouse gases listed in terms of subsection (1). Section 26(3) provides that a notice published in terms of section 26(2)—

a) must apply to greenhouse gas emitting activities which have already commenced and new greenhouse gas emitting activities;
b) must determine quantitative greenhouse gas emission thresholds expressed in carbon dioxide equivalent to identify persons to be assigned a carbon budget, in terms of section 27(1), and who are required, in terms of section 27(4), to submit greenhouse gas mitigation plans to the Minister;
c) must specify that the notice does not apply to listed activities which emit quantities of greenhouse gases below the quantitative greenhouse gas emission thresholds determined in terms of paragraph (b);
d) may contain transitional provisions and other special arrangements in respect of the activities contemplated in paragraph (a); and
e) must determine the date on which the notice takes effect.

Section 26(4) provides that the thresholds contemplated in section 26(3)(b) must be expressed in carbon dioxide equivalents for carbon budgets and greenhouse gas mitigation plans and shall be applicable at company level based on operational control; must be based on the availability of feasible mitigation technology; and must take into account any opportunities and constraints to implementation of policies and measures. Section 26(5) provides that the Minister may review the lists published in terms of sections 26(1) and (2) in line with the requirements of national and international mitigation goals for the purposes of determining whether such lists require revision and amendment, including when the need for such review is demonstrated by monitoring and evaluation results; technological advances; the best available science, evidence or information; the Republic's international commitments and obligations; or opportunities and constraints to implementation of policies and measures.

Section 26(6) provides that in the event that a review undertaken in terms of section 26(5) indicates the need for revision and amendment of one or both of the lists, the Minister may, by notice in the Gazette, revise and amend the relevant list, by adding or removing greenhouse gases from the greenhouse gases list; adding or removing activities from the activities list; or making other changes to the particulars on the list, such as the applicability of greenhouse gases to certain activities.

The relevant legislation indicated above must be read in the context of section 24 of the Constitution and relevant international legal instruments and agreements as well as the general requirement for organs of state to consider all relevant factors in decision-making processes in terms of the Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000). Any climate change assessment and decision made on an application for EA, WML or AEL would need to take an assigned carbon budget and the contents of a greenhouse mitigation plan into consideration, once sections 26(2)-(6) and section 27 of the CC Act is in operation, to ensure there is no conflict with such carbon budget and greenhouse mitigation plan. Any impact management actions or outcomes in an environmental management programme would need to be aligned and take into account the contents of a greenhouse gas mitigation plan. The consideration of a carbon budget and greenhouse mitigation plan would also mean that decisions are aligned with national emission reduction targets. The requirement for climate change implications to be taken into account is therefore important in decision making for EAs, AELs and WMLs.

Section 24J of NEMA mandates the Minister responsible for environmental affairs, or a Member of the Executive Council (MEC) responsible for environmental affairs in a province, with the concurrence of the Minister, to publish guidelines regarding NEMA listed or specified activities, or the implementation, administration and institutional arrangements of Regulations made in terms of section 24(5) of NEMA (which include the EIA Regulations). This Guideline seeks to give guidance on the implementation of the EIA Regulations where listed or specified activities are triggered, requiring EA, and climate change impacts are a relevant implication for purposes of the assessment and decision making. As indicated, the EIA Regulations are also applicable to the WML application process and, therefore, the Guideline would also apply to applications for WML. Similarly, as the EA air quality assessments inform the AEL application process, the Guideline also applies to such process.

3 PURPOSE AND APPLICABILITY

The purpose of this Guideline is to give guidance on the consideration of climate change impacts in the EIA processes linked to EA, WML and AEL applications.

a) Who is the target audience for this Guideline?

The Guideline is directed at competent and licensing authorities, EAPs, specialists, proponents, applicants, and other stakeholders involved in EIA processes.

b) What type of EIA processes and developments is this Guideline applicable to?

This Guideline has been developed to support the inclusion of climate change implications into EIA processes, regardless of whether such implications are applicable during the early development

planning phase to inform planning and design decisions (i.e., during pre-application planning) or as part of prescribed EIA processes to obtain statutory approvals for a proposed development.

Where specialist climate change input may be required, the Guideline promotes early, focused and appropriate involvement of specialists in EIA processes in order to encourage proactive consideration of potentially significant impacts, so that negative impacts may be avoided or effectively managed and for benefits to be enhanced through due consideration of alternatives and changes to the development proposal. The Guideline is applicable to a range of types and scales of development, across all components of the environment, i.e., different biophysical, social, economic and governance contexts. It must be noted that this Guideline is only applicable to green field projects (new developments) and not for EIAs done with existing developments already approved, unless the proposal is the extension of the already existing developments.

c) What will this Guideline not do?

In order to retain its relevance in the changing legislative context, the Guideline promotes the principles of EIA best practice within the context of the specific legislated framework for EAs, WMLs and AEL, without going into the detail of the specific administrative, procedural or reporting requirements and timeframes for applications to obtain statutory approval. The Guideline should, therefore, be read in conjunction with the applicable legislation, regulations and procedural guidelines to ensure that mandatory requirements are met, including vulnerability assessment requirements.

This Guideline does not replace the value of practical experience gained through coordinating, being responsible for and/or reviewing specialist inputs. The Guideline must not be viewed as prescriptive and inflexible but deviation from the guideline should only be permissible if reasonable and for good and scientifically sound cause. Such deviation should be transparent and highlighted for public participation processes and in reports for Interested and affected parties. It is intended to provide best practice guidance to improve the quality of specialist input related to climate change impacts. The Guideline should therefore not be used indiscriminately without due consideration of the particular context and circumstances within which an EIA is undertaken, as this has an influence on both the approach and the methods available and used by EAPs and specialists.

4 DEVELOPMENT AND CLIMATE CHANGE

4.1 In order to assist all stakeholders (e.g., applicants, proponents, EAPs, specialists, all authorities involved in EA, WML and AEL, and the public), this Guideline includes -

a) some examples –

i) of when a proposed development will likely have climate change implications as well as when climate change will be a likely consideration for a development;

ii) of measures that can be taken to mitigate the likely climate change impact of a development;

iii) on how to assess whether a development will contribute to climate change (typically by emission of GHGs or the destruction of carbon sink);

iv) on how to assess climate variability in catchment areas;

v) how to assess the impact of a development on features (social, economic, built and natural) that are crucial for adapting to climate change, or climate change resilience;

vi) of the potential for development to contribute to climate change by causing a loss of natural terrestrial vegetation, or riparian and wetland habitat that serve as carbon sinks;

vii) to assist EAPs, applicants, proponents and, where applicable, specialists regarding the minimum information to be included in EIA reports (including climate change impact assessment reports), to enable an informed opinion or recommendation as to whether the proposed development should be authorised;

viii) to assist authorities regarding the minimum information required to enable informed decisions on applications for EA, AEL and WML;

ix) to provide guidance on how to consider impact mitigation measures for GHG emissions when applying for EA, WML and AEL; and

b) minimum information guidance –

i) as to when a climate change impact assessment, and climate change impact assessment report, is likely to be required;

ii) on the type of information that must be included in a BA, scoping or EIA report when a climate change impact assessment and climate change impact assessment report is likely not to be

required;

iii) on the type of information that must be included in a climate change impact assessment report; and

iv) on the type of information that must be included in a climate change impact assessment.

4.2 It is reiterated that this Guideline does not provide comprehensive, technical guidance on climate change impact assessments, but rather emphasises the importance of climate change for EIA processes.

4.3 A proponent, applicant or EAP should consider whether a proposed development will likely have significant implications for climate change (i.e., accumulation of GHGs into the atmosphere) or if climate change will have significant implications for a specific development, both in terms of reducing adaptation and reliance, and the impacts of climate change manifestations on the project itself. If one or more of the following criteria apply to a proposed development, climate change will be a relevant consideration for EIA processes:

a) The development will likely result in the significant release (or absorption or avoidance) of GHGs and, therefore, contribute (or mitigate) climate change;
b) The development will likely impact (adversely or positively) on ecological infrastructure (e.g., biodiversity corridors or wetlands), socio–economic (e.g., employment) or built infrastructure (e.g., dams and storm water systems) that is important for climate change adaptation or resilience;
c) The development is necessary in order to enable the future avoidance and reduction of GHG emissions from other sources; and/or
d) The development will likely be impacted (positively or negatively) by future climate change manifestations (e.g., could be determined taking into consideration the nature or location of the development).

PLEASE TAKE NOTE: The lists of examples given in this Guideline are not intended to be exhaustive.

4.4 Examples of developments that will result in the release of significant GHGs include –

a) The development of electricity generation facilities that utilise fossil fuels[7];
b) Industrial developments that contribute to atmospheric GHG emissions;

[7] For example, See activities 2 and 37 of Listing Notice 1 and activity 2 of Listing Notice 2.

c) The extraction and production of fossil fuels[8];
d) The development and related operation of feedlots[9];
e) The clearing of indigenous vegetation, especially where the indigenous vegetation is important for carbon capture and storage, and where the cleared indigenous vegetation is going to be replaced by built infrastructure such as roads, airports and urban development;
f) The development of transport facilities (e.g., airports, railway lines, stations);
g) The development of waste disposal facilities; and
h) Treatment of waste through burn technologies such as incinerators.

4.5 Examples of developments that will likely result in impacts on ecological, social, economic resources or built infrastructure that are important for climate change adaptation or resilience include:

a) Developments that will impact on water resources, such as rivers, streams, aquifers, wetlands, as well as water resource systems such as strategic water source areas (both surface and groundwater) and aquifer recharge areas, given the projections that South Africa will likely become drier as a result of climate change;
b) Developments that will impact on peri-urban food systems and water supply which ensure food security resilience-affordability, access and short supply chain, and ecosystem services such as city heat mitigation;
c) Developments that, as a result of climate change manifestations, will impact on people's health or livelihoods;
d) Developments that will impact on coastal systems and wetlands that will mitigate severe weather events such as storms and floods that will likely become more severe and frequent due to climate change;
e) Development that will impact on water infrastructure, such as dams and storm water systems, given the likely drying climate and the future severe weather events;
f) Wastewater treatment works; and
g) Waste disposal facilities.

4.6 Example of developments that will likely be impacted by climate change include:

a) Developments in areas that will likely become prone to increased frequency and intensity of fires, rainfall, flooding or be affected by sea-level rise in the future as a result of climate

[8] For example, see activities 20, 21, 21D and 66A of Listing Notice 1, as well as activities 17, 18, 20 and 20A in Listing Notice 2.
[9] For example, see activity 4, 5, 39 and 40 in Listing Notice 1.

change;

b) Developments in drought affected regions, for example, agricultural developments;
c) Developments likely to be impacted by climate change due to "more extreme or severe weather events"; and
d) Developments which are affected by indirect impacts, such as carbon border taxes[10] that may impact on a development's viability.

It is important to note that the identification of activities in terms of section 24(2) of NEMA or the listing of activities in terms of NEMWA and NEMAQA, does not necessarily always indicate the presence of significant impacts from a climate change perspective. Relevant factors, including the sensitivity of the receiving environment and the scale of development, should be considered to determine the presence of significant impacts on a case-by-case.

5 GENERIC PRINCIPLES FOR INVOLVING CLIMATE CHANGE SPECIALISTS IN EIA PROCESSES

The following generic principles apply to the involvement of specialists in the EA, WML and AEL application processes and underpin this guideline:

a) Eliminate unnecessary climate change specialist involvement through proactive development planning and design to avoid or sufficiently reduce negative impacts that may otherwise require a specialist assessment;
b) Maximise the use of existing relevant information prior to involving a specialist;
c) Where appropriate and necessary, involve specialists early in the EIA process to increase efficiency and effectiveness of their involvement;
d) Maintain continuity of specialist involvement throughout the EIA process (specialist involvement should add value to development planning and design);
e) Support flexible, focused and appropriate involvement of specialists to provide adequate, relevant information to make informed decisions (i.e., the correct level of information should be supplied at the right time in the EIA process);
f) Allow for greater involvement of specialists in the identification of key issues, over and above those identified through stakeholder engagement processes;

[10] Carbon tax is an environmental tax on the carbon dioxide (CO2) equivalent of greenhouse gas emissions imposed in terms of the Carbon Tax Act, 2019 (Act No. 15 of 2019) and Customs and Excise Act No 91 of 1964.

g) Allow for efficient and effective interaction between climate change specialists and the EAP, the applicant, the authorities, other specialists on the EIA/development team and other stakeholders to improve the quality of the EIA process and outcomes;
h) Ensure that findings are informed by local and indigenous knowledge and experience, as ascertained through meaningful, inclusive and effective public participation;
i) Allow specialists to progressively refine and adjust climate change assessments during the course of the EIA process, as new information becomes available or changes are made to the project design, provided all information is made available to potential and registered interested and affected parties for consideration and comment; and
j) Ensure that specialists provide details of assumptions made, methods employed, climate and socio-economic scenarios applied, and baseline references used in their assessments.

6 THE ROLE OF THE EAP

The EAP is appointed by the proponent to manage the EA/WML application on behalf of the proponent. The EAP undertakes the screening of issues and concerns, inclusive of climate change implications. It must be acknowledged that climate change is not a concern in every EIA process, and it is the responsibility of the EAP to identify the need for specialist climate change inputs into the EIA process. Note that specialist inputs can be requested prior to or at any stage of the EIA process, taking into consideration the prescribed timeframes in the EIA Regulations, and can range from providing brief input when consulted, to a specialist climate change impact assessment. The following steps will assist in determining the need for specialist input:

Step 1: Gather and evaluate the adequacy of available information

At the start of the EIA process, the EAP must gather all the relevant information on the proposed development, the affected receiving environment, and the strategic context (i.e., policies, plans and frameworks) within which the proposed development will be situated. This information is needed to identify issues that may have a positive or negative impact on the biophysical, social or economic environment. Note that at this stage, information should be sufficient to identify climate change implications (Step 2 below), rather than to assess the significance of potential climate change impacts.

Additional information about the proposed development, the environment and legal, policy and planning context may be required, but if insufficient information is available on any aspect of the proposed development or the context triggers concerns about significant negative climate change impacts, the EAP

should involve an appropriate specialist(s) to provide outstanding information.

Step 2: Identify potential issues and concerns

The EAP must ensure that the EIA process only focuses on climate change implications where it is relevant (avoiding the generation of excessive amounts of irrelevant information). Consistent with the principles of sustainable development, the screening process must consider intra- and inter-generational sustainability concerns (i.e., identify issues of potential concern to future generations as well as the current generation). Furthermore, and of importance for climate change, potential local, regional, national and international climate change implications should be identified, from the following resources and tools, amongst others:

- National Climate Change Information System (NCCIS).
- United Nations Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report – The Physical Science Basis (2021).
- South African Climate Change Vulnerability Atlas (SARVA).
- South African Environmental Observation Network (SAEON portal).
- Climate System Analysis Group (CSAG).
- Climate Information Portal (CIP).
- National Climate Change Adaptation Strategy (2020).
- National Climate Risk and Vulnerability (CRV) Assessment Framework (2020).
- Relevant Provincial Climate Change Response Strategy.
- Relevant District Municipality Climate Change Report.
- Relevant Local Municipality Climate Change Report.
- CSIR Greenbook Local Municipality Risk Profiles.

As already highlighted, the EAP appointed to manage the EIA process takes responsibility for the scoping[11] of issues and concerns, inclusive of climate change implications, on behalf of the proponent. This determination will also be influenced by the inputs of other stakeholders, especially the determination from the competent/licensing authorities. The issues and concerns can be identified through a combination of the following approaches:

a) EAP's knowledge and experience from similar developments;
b) Specialist knowledge and experience;

[11] Even though the basic assessment process does not draw distinction between the scoping and impact assessment phases of the process, there is indeed a part of the process that consist of an exercise to scope and determine what information should form part of the basic assessment and thereafter an EIA process. Any reference to scoping/ EIA in this Guideline should therefore be seen to also form part of the BA process.

c) Consultation with relevant organs of state;
d) Consultation with landowners, adjacent landowners as well as communities;
e) Consultation with key infrastructure providers and service providers;
f) Consultation with stakeholders;
g) Proponent's/applicant's knowledge and experience in constructing, operating and closure of similar developments;
h) A review of relevant literature (e.g., EIAs undertaken for similar developments) and best practice guidelines;
i) Legislation, policies and strategic frameworks and strategic plans;
j) Site visits;
k) Site sensitivity verification reports (SSVRs); and
l) Scoping checklists.

Whilst the EAP must respond to all issues that are raised during scoping, not all issues require specialist input. The rationale used for determining which issues are scoped out without further specialist input and which issues are assessed in more detail (potentially by specialists) is described in subsequent Steps 3-5.

Step 3: Determine if the issue falls within the scope of the EIA process

After climate change has been identified as an issue as per paragraph 4.3 above, the EAP must determine the impact significance[12] and whether it falls within the scope of the EIA process, as not all issues identified would require a climate change assessment. The EAP may be requested by the authority to include a discussion on the issue and implications in the BA and/or Scoping and EIA reports. If appropriate, this could be informed by specialist input.

Not all activities that require EA, WML or AEL will require climate change impact assessments. However, it must be kept in mind that some climate change impacts are cumulative in nature – even small amounts of GHG emissions may still contribute to global climate change. All EIA reports should still include potential risks from climate change that could affect the development, and the risks associated with the approved development (adaptation, resilience and GHG emissions) in the short, medium or long term.

In the event where no climate change impact assessment is deemed necessary, the BA or EIA reports

[12] DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

should include the following:

a) A reasoned opinion (from an adaptation perspective) whether the proposed activity, activities or portions thereof should be authorised, including any avoidance, management and adaptation measures that will be included in the EMPr;

b) A reasoned opinion of whether or not the development will result in significant GHG emissions;

c) A reasoned opinion of whether or not a proposed development would impact adversely on the ecological, socio-economic or built infrastructure that is important for climate change adaptation or resilience, or a carbon sink;

d) A reasoned opinion of whether or not a specific development will likely be impacted by the physical effects of climate change, such as more severe and frequent floods, droughts, increased air or water temperatures, heatwaves and storm events, or by socio-economic disruption/s caused by water and food supply disruptions, biodiversity loss, disease, climate migration or other climate related factors;

e) A statement on how the impact mitigation hierarchy was followed in respect of the proposed development's climate change impacts, for example, was the climate change impact avoidable, and if not, why avoidance is not possible and if the impacts can be minimised and remedied;

f) A statement on how the risk averse and cautionary approach was applied in respect of a proposed development's likely climate change impacts and the likely impacts of climate change on the proposed development;

g) A comparison of the impacts of the proposed development on the identified alternatives. For example, contextualize a proposal for a coal fired power station by comparing it to renewable energy alternatives;

h) Proposed recommendations in the form of conditions to be included in the EA, AEL and/or WML; and

i) Any other information that may be requested by the competent authority and/or licensing authority.

Step 4: Determine whether climate change risk can be resolved through changing the development proposal

Consistent with the application of the impact mitigation hierarchy, this step determines if climate change risks can be resolved through amending the development proposal or components thereof (e.g. design, layout, location, no-go alternative or technology). The consideration of information contained in a strategic assessment or policy document may be one of the reasons why a climate change assessment is not considered necessary. However, this does not negate the need for the EAP to provide a reasoned opinion on the merits of the issue/impact. This may require specialist involvement to propose and investigate the possible impacts of practical changes to the development proposal, considering the nature of the

receiving environment. The consideration of alternatives should be well motivated.

If changes to the development proposal can be made which effectively avoid or minimize negative impacts or enhance positive impacts, and which do not raise other key issues, closure can be reached on the issue without further assessment or specialist involvement (i.e., the issue can be scoped out). This must be clearly documented and communicated in the EIA process. In instances where an issue cannot be resolved through changing the development proposal, the EIA process moves to step 5.

Step 5: Assess potential impacts associated with the proposed development, including recommendations for management actions and monitoring programmes

The remaining unresolved climate change risks (after following steps 1-4) that could not be addressed through changes to the development proposal, need to be evaluated by the EAP to determine if enough information exists to assess the associated impacts without specialist involvement. If the EAP is able to draw on existing information and experience to confidently assess the impact without specialist input or is able to conclude that the potential impact is of such low significance that no further impact assessment is required, then the issue can be closed off without further specialist involvement.

However, climate change risks that cannot be resolved through the screening processes based on the available information must be taken forward through BA and/or S&EIR processes and must be addressed through the involvement of climate change specialists. The EAP, in conjunction with the specialists, should draft the terms of reference (ToR) for the required input. At this stage, the specialist's role is to assess the potential impact of the proposed development (including feasible alternatives within the development proposal) and provide recommendations for management actions and monitoring programmes. The BA/scoping and EIA reports must also include a comparison of the impacts of the proposed development with the impacts of the identified alternatives.

Further to the above, it must be noted that whilst the EAP as part of the EIA process will determine the need for involvement of a climate change specialist, the competent authority or licensing authority may be approached through a pre-application meeting to obtain the view of the competent authority on whether or not a proposed development could potentially have significant climate change impacts and therefore require climate change specialist input into the EIA process. As the expression of a view in this regard may have significant consequences and requires sound knowledge and insight into the potential climate change impacts related to the development, the competent/licensing authority should avail itself of expert input and ensure that its decision in this regard is based on sound scientific and other objective

reasons. This must be communicated to the EAP.

7 THE ROLE AND TIMING OF SPECIALIST STUDY WITHIN THE EIA PROCESS

Once the need for climate change specialist inputs has been identified by the EAP, specialists can be involved for different purposes during various stages of the EIA process, regardless of whether the process is initiated before or upon submission of an application for statutory approval. Specialists can therefore provide input during pre-application planning (highly recommended) and/or following the submission of an application for statutory approval of the proposed development (i.e., during screening, BA and/or scoping and/or impact assessment). Differences in the nature and outcome of specialist involvement at different stages of the project lifecycle and EIA process are summarized in Table 1.

Table 1: Role and timing of specialist input within the *EIA process*[13]

Scope of specialist involvement	Pre-application meeting/planning	Screening and scoping	Impact assessment
Need for specialist involvement	The need for specialist involvement is to be determined by the EAP, on behalf of the proponent, based on the level of information available on the nature and scale of the development proposal, the nature of the receiving environment, the policy and strategic environmental planning context and need and desirability[14] considerations.		
Timing of specialist involvement	Prior to submission of an application for environmental authorisation – part of the planning team.	In accordance with the provisions of the applicable NEMA and SEMA, as well as their subordinate legislation.	
Nature of involvement	Proactive and advisory in nature and often focused on avoidance of impacts. Intensity of involvement determines whether or not ToRs are required.	Proactive, reflective and advisory. Intensity of involvement determines whether or not ToRs are required. This mostly constitutes specialist opinions and inputs without detailed assessments.	Investigative, analytical and advisory. ToRs required. This constitutes detailed specialist assessment(s).
Type of decision which specialist involvement informs	Informs proponent's development planning and design (including alternatives) and if the development should proceed into the formal regulatory process (fatal flaw analysis).	**Screening** – Would implementing the project be likely to have significant effects on, or be significantly affected by, climate change? - To determine precisely what needs to be assessed	Informs the EAP's assessment of impacts, mitigation measures and if the development proposal should be recommended

[13] Table 1 is also applicable to the basic assessment process. The basic assessment process also involves planning and may have a pre-application meeting. Even though the basic assessment process does not draw distinction between the screening, scoping and impact assessment phases of the process, there should indeed be a part of the process that consist of an exercise to screen and determine what information should form part of the basic assessment.
[14] The Guideline on Need and Desirability (DFFE, 2017).

Scope of specialist involvement	**Pre-application meeting/planning**	**Screening and scoping**	**Impact assessment**
		after having been determined that EA, WML or AEL is required. **Scoping** – to identify the issues and impacts that are likely to be important and to establish the ToRs for EIA.	for decision making. Informs the competent authority's review of the application for EA and the adequacy of the EIA mitigation measures. Where an application is being considered, the specialist information informs the conditions attached to the decision and the management measures of the EMPr.

Although current EIA practice often only involves specialists during the impact assessment phase of the process, this guideline encourages earlier, focused and appropriate involvement of climate change specialists in order to improve the efficiency and effectiveness of their input.

Importantly, the involvement of specialists should not be seen as an obstacle in the approval process, but that specialist input, especially at the early concept stage of the development, can play an important role in helping to identify potential "fatal flaws" and formulate practical design alternatives that enhance

development benefits, as well as minimise negative impacts, and possibly even costs, of the development.

Depending on the nature of the proposed development, the stage of development planning and the EIA process, the environmental context and the amount of available information, climate change specialist involvement will vary in intensity (i.e., level of detail) and may include any or all of the following approaches:

a) Provision of a specialist opinion or comment - professional judgement;
b) Research and literature review – a synthesis of current available information;
c) Baseline survey, from a rapid scan to a more comprehensive survey (including site visit/s);
d) Identification of, and consultation and interviews with all stakeholders, particularly affected communities with localised knowledge of the land in question;
e) Mapping and simulation modelling;
f) Scenario planning;
g) Engagement with other specialists (such as biodiversity and aquatic specialists) to provide specialist input on the climate change risks associated with their respective specialist topics;
h) Specific approaches such as:
    i) Climate change risk and vulnerability assessments;
    ii) Carbon footprint analysis;
    iii) Greenhouse gas emissions inventories; and
    iv) Carbon footprint calculations;
i) Cause-effect-impact pathways, to identify and focus on significant issues; and
j) Assessment of impacts and their significance as required in terms of the EIA Regulations. A proposed climate change significance rating framework is attached as Appendix 1 to this Guideline.

The ToR for specialist involvement should, therefore, be appropriate to the purpose and intensity/scale of involvement and should be discussed and agreed upon between the EAP and the specialist.

The ToR for climate change impact assessment should, amongst others, include the following information:

a) The type, scale and duration of the development;
b) The commitments made in terms of the Paris Agreement;
c) The environmental context within which the development is proposed (i.e., sensitivity of the receiving environment, the type and significance of resource affected, covering socio-ecological and socio-

economic aspects);

d) The type of climate change issues to be addressed;
e) The adequacy of information available (i.e., currently available and credible science);
f) South Africa's current domestic and international obligations regarding emissions reduction;
g) The potential significance of impacts;
h) The level of certainty and confidence required; and
i) Legal requirements and policy directions (i.e. Constitution, NEMA principles and duty of care, CC Act, National Climate Change Response Adaptation Strategy, development and implementation of a GHG emission reduction system, adoption of a national GHG mitigation framework; National Framework for Air Quality Management, as well as the National Climate Change Response Plan White Paper, 2011). Reference should also be made to relevant provincial and municipal climate change policies and initiatives.

8 ROLES AND RESPONSIBILITIES

The roles and responsibilities of the various stakeholders in the EIA process, in particular the EAP, the climate change specialist, the proponent/applicant and competent /licensing (decision-making) authorities, as it pertains to climate change issues, are described as follows:

8.1 The EAP, on behalf of the proponent/applicant, must *inter alia* –

a) determine the need for and purpose of climate change specialist involvement in the EIA process;
b) where appropriate, ensure that the specialist becomes involved as early as possible in the EIA process, including the pre-application phase. (This includes determining the appropriate level of specialist input required i.e., to determine if a specialist comment will be adequate, or if a detailed specialist assessment will be required);
c) ensure specialist involvement is appropriately budgeted and planned for;
d) draft the ToR for the appointment of the climate change specialist;
e) Ensure that the specialist ToR is appropriate to the nature of the development and the environmental context; and
f) incorporate information from climate change specialist reports (e.g. alternatives, mitigation measures, and trade off) in an objective manner into the BA/ scoping and EIA reports and ensure that the specialist information being used is communicated to all stakeholders as part of the application process and that potential and registered interested and affected parties are provided with the opportunity to comment on reports.

8.2 The climate change specialist must *inter alia* –

a) understand the nature of inputs required and the phase of the EIA process (especially as the pre-application phase may not include a ToR);

b) clarify the ToR with the EAP and ensure its appropriateness considering the nature of the development and the environmental context;

c) conduct climate change impact assessments, including risks and vulnerability analysis and compile and produce climate change impact assessment reports;

d) select the approach and method to address impacts and clearly motivate and communicate this to the EAP; and

e) provide information objectively and clearly communicate this to the EAP for inclusion in the EIA process.

8.3 The proponent/applicant must *inter alia*-

a) allocate adequate time and budget to the involvement of climate change specialists in all phases of the EIA processes, especially during the pre-application (development planning) phase (under the guidance of the EAP);

b) provide for a contingency budget in the event that additional specialist involvement may be required during the course of the statutory EIA process (i.e., BA, scoping and EIA phases), recognizing that it is impossible to accurately determine the scope of specialist involvement during the initial EIA budgeting process;

c) recognise that changes to the development proposal during the course of the pre-application (development planning) phase, as well as during the statutory EIA process, may be required and may have time and budgetary implications for the EAP and the specialists;

d) respect the requirement for the EAP and specialists to provide accurate and objective information to the competent/ licensing authority (decision-making authority) and timeously provide relevant and accurate development information necessary to identify and assess impacts; and

e) contribute constructively, consistent with the steps of the impact mitigation hierarchy, to the identification of issues, appropriate alternatives, impacts and mitigation measures associated with the proposed development.

9 EXTENT AND CONTENT OF CLIMATE CHANGE IMPACT ASSESSMENTS

9.1 Climate change impact assessment

After it has been determined that there are significant climate change manifestations/risks that require assessment as part of the EIA, a climate change impact assessment must be undertaken to assess:

a) the extent to which the proposed development will result in the release of GHG emissions into the atmosphere[15] or sequester GHGs from the atmosphere;
b) the impact of the proposed development on socio-economic, ecological or built infrastructure that is important for climate change adaptation and resilience;
c) the projected impact of climate change manifestations (such as projected increased temperatures or decreased rainfall) on the proposed development; and
d) the extent to which the impacts and risks identified in (a) - (c) can be mitigated.

9.2 Information required to provide specialist input

The existence of adequate climate change information is a prerequisite for effective and efficient specialist involvement. The primary responsibilities for sourcing the required information for purposes of compilation of the specialist climate change report lies with the specialist. The following information is generally required:

a) Relevant development information (including relevant alternatives where applicable);
b) Information describing the receiving environment;
c) Legal, policy and planning context;
d) Issues raised during the screening process;
e) Information and sources for determining climate change related manifestations that may be associated with a proposed project;
f) Information generated by other specialists (such as aquatic and biodiversity features); and
g) Contextual factors, such as inductive probability and statistical probability, external to the EIA that may influence issues and concerns (where relevant); and

It must be noted that the lack of adequate information on the receiving environment or the legal, policy and planning context at the start of the EIA process, may require upfront specialist involvement to fill this information gap.

[15] The Methodological guidelines for quantification of GHG: https://www.gov.za/sites/default/files/gcis_document/202210/47257gon2598.pdf.

9.3 When must a climate change assessment be undertaken?

When the climate change impacts of a proposed development are significant, as determined, following the steps 1 to 5 as described in paragraph 6, a specialist climate change assessment will generally be required. Whilst the EAP, as part of the EIA process, will determine the need for involvement of a climate change specialist, the competent or licensing authority can, however, differ from the EAP and request that a specialist assessment is provided. Agreement on the need for a specialist assessment should be reached early in the process, at pre-application or application stage. The significance of climate change impact will depend on a multitude of factors, including the location of the proposed development, the type, and scale of the development, the nature and sensitivity of the receiving environment, and development duration.

In summary, a climate change impact assessment will be required in the following instances:

a) The EAP, in following steps 1 to 5 as set out in paragraph 6, determines the need for such a specialist assessment as part of the EIA, WML and AEL process;
b) The proposed development directly involves an activity specified in Annexure 1 of the National Greenhouse Gas Emission Reporting Regulations and where the associated reporting threshold is exceeded[16]; or
c) Where such assessment is specifically required by the competent or licensing authority.

9.4 Content of a climate change assessment

As with all specialist reports, a climate change impact assessment must include vulnerability assessment reports and must comply with the requirements of the EIA Regulations (Appendix 6).

Examples of the type of information that should be included in a climate change impact assessment report include:

9.4.1 Declaration

A declaration by the specialist that he or she is independent in a form as may be specified by the competent /licensing authority.

[16] National Greenhouse Gas Emission Reporting Regulations, 2016 as amended.

9.4.2 Scope and purpose of the report

An indication of the scope of, and the purpose for which, the report was prepared (this includes, where applicable distinguishing between pre-construction, construction, operational and closure/decommissioning impacts).

9.4.3 Description of the development and activities

a) Description of the development and associated activities.
b) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment.
c) Summary of potential development and, where relevant, operational impacts, including:
    - GHG emissions associated with the project;
    - Impact of the project on climate change adaptation and resilience; and
    - Impact of climate change manifestations (e.g., increased temperatures) on the project.

9.4.4 Methodology

A description of the methodology adopted in preparing the report or carrying out the specialized process inclusive of equipment and modelling used.

Typical approaches to providing climate change inputs, including:

a) Desktop study – a synthesis of current available information;
b) Professional judgment or opinion;
c) Site visits;
d) Cause-effect-impact pathways, to identify and focus on significant issues;
e) Identification of development specific methodologies such as:
    i) Baseline survey, from a rapid scan to a more comprehensive survey;
    ii) Projections of future climate change manifestations based on up to date climate change modelling, which can be sourced from various climate change tools, such as the CSIR Greenbook Municipal Risk Profiles;
    iii) Climate change risk and vulnerability assessments;
    iv) Carbon footprint analysis;
    v) Greenhouse gas emissions inventories;
    vi) Carbon footprint calculations;
    vii) Detailed studies and/or surveys, laboratory processing, analysis, and/or mapping;
    viii) Modelling; and

ix) Scenario planning.

9.4.5 Impacts or findings

a) A description of climate change (temperature and rain-precipitation) scenarios applicable to the specific geographical area and climate risks associated with it;
b) A description of the transition to low-carbon transport modes;
c) A description of coastal flooding and erosion;
d) A description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change (this could also superimpose climate scenarios and risks looking into the future and determine whether the identified impact worsens or not, and implications for that);
e) A description of the potential impact on the surrounding environment, and implications for the proposed development;
f) A description of the potential impact on the proposed development, and implication for the surrounding environment and the climate resilience of the proposed development;
g) A description of the surrounding social environment, including all communities and settlements, whether formal or informal, in order to ascertain the full scope of impacts, including disproportionate impacts on certain groups and to enable adequate and proactive public participation, to ensure that the needs of all affected parties are able to be engaged with and addressed;
h) An indication of what GHGs are likely to be emitted as a result of the proposed activity;
i) An estimation of the GHG emissions, direct and indirect (including upstream GHG emissions), that will be released into the atmosphere annually throughout the full lifecycle of the project or activity;
j) An analysis of how the estimated GHG emissions associated with the project will impact on South Africa's GHG emissions reduction trajectory and its ability to maintain its domestic and international obligations under the Paris Agreement (including its ability to maintain its NDCs), and whether the development is aligned with a fair share of emissions and mitigation pathways compatible with a 1.5°C warming limit, and/or the latest scientific conclusions on what constitutes a safe warming limit;
k) The likelihood of the proposed development being exposed to climate related financial risks such as transition risks, stranded assets, the negative impact on trade and market competitiveness, as well as physical climate risks should all be taken into account;

l) An estimation of the climate change impact, measured in GHG emission equivalent, of destroying or damaging a carbon sink should the proposed development have a likely adverse impact on a carbon sink;

m) An assessment of how important the ecological or built infrastructure is for climate change resilience and adaptation in a specific context, should the development have a likely adverse impact on such ecological or built infrastructure;

n) An assessment of the socio-economic and health impacts taking into account that climate change impacts are often most intensely experienced by certain groups and communities, including economically marginalised persons, women and participants in traditional and informal economies;

o) An assessment of whether the proposed development would have any positive impacts on climate change;

p) A description of the uncertainties associated with the findings/impacts;

q) Mitigation outcomes and mitigation actions, including any monitoring requirements to be included in the EMPr;

r) Whether, and how, the climate change impacts and risks of a proposed development can be mitigated, having due regard to the precautionary principle and the impact mitigation hierarchy, which determines that environmental impacts must be avoided, and where they cannot altogether be avoided, must be minimised and remedied;

s) Details of the expected carbon footprint of the development including, but not limited to:

    i) Identification of avoidance, management and mitigation measures (i.e., consideration of the impact mitigation hierarchy for managing development related GHG emissions, including full life cycle emissions); and

    ii) Identification of the contribution that the development could have towards climate change through the accumulation of GHGs in the atmosphere.

10 THE APPLICATION OF THE IMPACT MITIGATION MEASURES

The categories for prescribing and designing climate change impact mitigation measures (avoidance, minimization, rehabilitation and offsetting) must be considered/discussed during all phases of an EIA process, starting at the pre-application phase to identify the feasibility of the development from a climate change perspective.

The following considerations can guide the specialist to improve the effectiveness of mitigation measures:

a) For each identified positive impact, determine whether it can be further enhanced, and for identified negative impacts, state the mitigation measures that will reduce climate change related risks or reduce the GHG emissions;
b) For each impact, demonstrate how the mitigation actions will result in reducing the GHG emissions;
c) For each negative identified impact, provide mitigation objectives that would result in a measurable reduction in climate change risk or GHG emissions;
d) For each negative impact recommend practically attainable mitigation actions that can measurably affect the significance rating;
e) New innovative techniques should be investigated and should form part of the considerations for the custom-design of mitigation measures to particular problems;
f) Mitigation measures should, where possible, be based on scientific evidence or measures applied successfully in other comparable developments;
g) Provide a precise description for each recommended mitigation action;
h) The mitigation actions should be affordable, feasible, achievable and measurable with defined criteria for success;
i) Mitigation measures for addressing identified impacts should not result in, or create additional impacts of their own;
j) If no mitigation is considered feasible, this must be stated and reasons provided;
k) The significance rating of the impacts of the proposed project (climate change risks or GHG emissions) with and without mitigation measures should be provided;
l) A specified implementation date, time and sequence for mitigation measures should be provided; and
m) A clear assessment of the likely success of the proposed mitigation measures should be provided.

Table 2 below summarizes the different approaches to prescribing and designing mitigation measures[17].

[17] Draft Overall Policy on Environmental Offsetting in South Africa (2.2 Mitigation options).

Table 2: **Different categories for prescribing and designing mitigation measures**

1. Avoidance:	The least risky mitigation option that requires the consideration of options relating to project desirability, necessity, location, scale, layout, technology and phasing to avoid or prevent negative impacts on the environment.
2. Minimization:	The consideration of alternatives to project location, scale, layout, technology and phasing that would reduce, moderate or minimise impacts on the environment.
3. Rehabilitate:	The consideration of activities to rehabilitate, restore, remediate, repair or reinstate the environment where impacts are unavoidable and where such activities return the impacted environment to a near-natural state or an agreed land use after the project.
4. Offset:	The consideration of measures to counterbalance the remaining impacts on the environment after every effort has been made to avoid, minimise and then rehabilitate impacts through avoiding, minimising and rehabilitating impacts or impacted areas elsewhere.

11 ADDRESSING DIRECT, INDIRECT AND CUMULATIVE IMPACTS

The specialist must consider potentially significant direct, indirect and cumulative climate change impacts of a proposed development. This requires the following:

a) Conceptualisation of possible cause-effect pathways resulting from the proposed development;
b) An understanding of the strategic context within which the proposed development is located, the current and future plans/frameworks, developments and activities in the area;
c) An awareness of other threats or trends that could affect the socio-economic and socio-ecological systems within which the development is proposed;
d) An understanding of the likely resilience and status of affected systems; and
e) An understanding of broader strategic sustainability goals or targets for the area that would be affected by the proposed development.

12 CLIMATE CHANGE ADAPTATION

Climate change implications require a response that specifically seeks to reduce the vulnerability of socio-

economic and biological systems to possible negative impacts of climate change on the proposed development, and the surrounding environment. The proposed development could have detrimental impacts and contribute impacts on the surrounding environment and other closely related infrastructure and could also be impacted negatively as a result of the risks associated with climate change, and the surrounding environment. Climate change adaptation becomes fundamental to ensure that the proposed development is not vulnerable to climate risks, and to ensure that adaptation measures are implemented to prevent or minimise negative impacts associated with climate change as a result of the development.

The following issues must be addressed by climate change impact assessments in the context of EIA, namely:

a) Climate change manifestation scenarios that are anticipated;
b) Climate change risks associated with climate change manifestations;
c) Likely impact of the climate change risks on the developments;
d) Likely impact of climate change manifestations on the surrounding environment, and implications for the development and the surrounding environment; and
e) Explanation of how the existing impacts identified during the EIA process are likely to be contributed or minimised as a result of climate change manifestations and what measures are likely to be implemented to accommodate and manage (adapt to) the anticipated worst scenario, where applicable.

Projections of future climate change manifestations based on up-to-date climate change modelling can be sourced from various climate change tools, such as the CSIR Greenbook Municipal Risk Profiles.

13 EMPR REQUIREMENTS: IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

An EMPr relates to the implementation phase of an EIA process. As such, the EMPr does not assess impacts, but governs the implementation of the mitigation measures that have been identified during the preceding assessment phase of the EIA process.

13.1 EMPr content

Where an EMPr is prepared for a proposed development that will likely have climate change impacts, impact management outcomes and impact management actions regarding the mitigation measures for

the climate change impacts must be recorded in an EMPr. As terms suggest, impact management outcomes are certain management targets that are set out in an EMPr, and impact management actions are the actions required to meet those targets.

The impact management outcomes in the climate change context could include, for example, enhancing a carbon sink or ecological infrastructure that is important for climate change adaptation or resilience. Specific impact management actions could include, for example, using low carbon technology during the construction and operational phases of a development, designing the development in such a way as to enhance a carbon sink or important ecological infrastructure or constructing artificial levees to protect the development from a storm surge or a flood. Any adaptation measures and/or mitigation measures proposed must be included in the EMPr and comply with Appendix 4 of the EIA Regulations.

The EMPr must be reviewed and approved by the competent authority or licensing authority.

13.2 Adaptation and impact mitigation measures

a) Mitigation impact management outcomes and mitigation impact management actions, including any monitoring requirements to be included in the EMPr.
b) Whether, and how, climate change impacts of a proposed development can be mitigated, having due regard to the precautionary principle and the impact mitigation hierarchy, which determines that environmental impacts must be avoided, and where they cannot altogether be avoided, must be minimized and mitigated.
c) Identification of adaptation measures for the impact identified in the impact section (both impact on the proposed development and of the proposed development on the surrounding environment).

14 REFERENCES

CLIMADAPT 2003. Evaluation of the ClimAdapt Guide to Incorporating Climate Change into the Environmental Impact Assessment Process. Canada: Canadian Environmental Assessment Agency.

DEA (Department of Environmental Affairs). 2010. Companion to the EIA Regulations 2010, Integrated Environmental Management Guideline Series 5. Department of Environmental Affairs, Republic of South Africa, Pretoria.

DEA (Department of Environmental Affairs). 2011a. National Strategy for Sustainable Development and Action Plan (NSSD) 2011-2014. Department of Environmental Affairs, Pretoria.

DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

DEAT. 2004. A National Climate Change Response Strategy for South Africa. DEAT, Pretoria.

DEAT. 2009a. The National Climate Change Response Policy, Discussion Document for 2009.

National Climate Change Response Policy Development Summit, March 2009. Pretoria: Department of Environmental Affairs and Tourism.

Declaration of Greenhouse Gases as Priority Air Pollutants, Government Notice No. 710 in Government *Gazette* No. 40996 of 21 July 2017.

GILDER, A & PARRAMON, M. 2011. Climate Change and Environmental Impact Assessments – The South Africa context. Environmental Management, 6(3), 12-13.

The Constitution of the Republic of South Africa, 1996.

Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

National Environmental Management Act, 1998 (Act No. 107 of 1998).

National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).

National Environmental Management Waste Management Act, 2008 (No. 59 of 2008).

National Greenhouse Gas Emission Reporting Regulations, Government Notice No. 994 in Government *Gazette* No. 40762 of 3 April 2017, as amended.

The Environmental Impact Assessment Regulations, Government Notice No. R982 in Government Gazette No. 38282 of 4 December 2014, as amended.

15 APPENDIX 1: CLIMATE CHANGE SIGNIFICANCE RATING FRAMEWORK

The criteria for the rating of climate change impact severity for a proposed project may not always be the same as for other environmental and social risks or issues. The following framework is proposed with respect to climate change risks associated with the following main climate change impact categories:

- Impact of climate change manifestations on the project
- Impact of the project on climate change adaptation or resilience
- Impact of the project on greenhouse gas emissions

Table 3 provides and overall climate change significance rating framework that aligns with the requirements of Appendix 3 of the EIA Regulations for the environmental impact assessment process, particularly paragraph 3(1)(h)(V-V1).

Table 4 provides a more detailed criteria for the ranking of impact severity.

Table 5 provides a more detailed criteria for ranking of impact severity (intensity).

Table 6 provides a more detailed description of significance ratings.

Table 3: Climate change impact significance rating framework.

CLIMATE CHANGE IMPACTS OR RISKS	IMPACT OF CLIMATE CHANGE MANIFESTATIONS ON THE PROJECT	IMPACT OF THE PROJECT ON CLIMATE CHANGE ADAPTATION OR RESILIENCE	IMPACT OF PROJECT ON GREENHOUSE GAS EMISSIONS
EXAMPLES OF IMPACT OR RISK	• Increased rainfall may expose the project to a higher risk of flooding and damage to infrastructure.	• The project may damage coastal dune systems thus compromising the natural coastal defence and increasing vulnerability to tidal surges.	• The project may require the consumption of significant quantities of fossil fuels resulting in a significant increase in GHG emissions into the atmosphere.

CLIMATE CHANGE IMPACTS OR RISKS	IMPACT OF CLIMATE CHANGE MANIFESTATIONS ON THE PROJECT	IMPACT OF THE PROJECT ON CLIMATE CHANGE ADAPTATION OR RESILIENCE	IMPACT OF PROJECT ON GREENHOUSE GAS EMISSIONS
	• Increased sea-level rise and tidal surges may expose infrastructure to damage.	• The project could result in the loss of a water resource thus increasing vulnerability to expected drought conditions.	• The project may be a renewable energy project that avoids or reduces the burning of fossil fuels thus reducing GHG emissions into the atmosphere.
IMPACT CRITERIA			
1. **Nature** – the nature of an impact is classified as negative or positive, also whether an impact is Direct or Indirect.	Positive or negative Direct or indirect	Positive or negative Direct or indirect	Positive or negative Indirect
2. **Duration** – the length of time the impact is expected to last, from short-term to long-term or permanent or how often the impact occurs, such as frequency of storm and flooding events.	Rating according to Table 4 below.	Rating according to Table 4 below.	Probably permanent
3. **Extent** **Spatial Extent** – the geographical area affected by the impact, ranging from local to global.	Local	Local, study area, municipality or regional	Global

CLIMATE CHANGE IMPACTS OR RISKS	IMPACT OF CLIMATE CHANGE MANIFESTATIONS ON THE PROJECT	IMPACT OF THE PROJECT ON CLIMATE CHANGE ADAPTATION OR RESILIENCE	IMPACT OF PROJECT ON GREENHOUSE GAS EMISSIONS
Extent of Impact – the scale of the impact on the receiving environment, such as changes in temperature, rainfall patterns, or sea levels.			
4. **Probability** – the likelihood of the impact occurring ranging from low to high probability.	Rating according to Table 6 below.	Rating according to Table 6 below.	PROBABLE based on calculations
5. **Irreplaceability** – the extent to which the impact will cause irreplaceable loss of resources.	Rating according to Table 6 below.	Rating according to Table 6 below.	Probably VERY HIGH due to irreversibility of elevated GHG concentrations in the atmosphere.
6. **Reversibility and mitigation potential** – The extent to which the impacted environment or system can be mitigated to reduce or avoid the impact through various measures and return to its previous state after the impact occurs. The degree of difficulty of implementing measures to reverse and/or mitigate the	Rating according to Table 6 below.	Rating according to Table 6 below.	Reversibility probably VERY HIGH negative due to irreversibility of elevated GHG concentrations in the atmosphere. Rating according to Table 6 below.

CLIMATE CHANGE IMPACTS OR RISKS	IMPACT OF CLIMATE CHANGE MANIFESTATIONS ON THE PROJECT	IMPACT OF THE PROJECT ON CLIMATE CHANGE ADAPTATION OR RESILIENCE	IMPACT OF PROJECT ON GREENHOUSE GAS EMISSIONS
various impacts including the practical feasibility, the cost and the potential effectiveness of the measure(s).			
7. **Severity (intensity)** The severity or intensity of the impact on the environment or socio-economic systems. This could include the degree of temperature change, the intensity of storms, or the severity of droughts, or levels of project GHG emissions.	Rating according to Table 6 below.	Rating according to Table 6 below.	• VERY HIGH – More than 1,000,000 tCO_2e per year. • HIGH – More than 100,000 tCO_2e per year. • MODERATE – More than 10,000 tCO_2e per year. • LOW – Less than 10,000 tCO_2e per year.
8. **Significance** – The significance of an impact is often determined by combining the ratings for the above criteria. For example, a high-impact event with a high probability, global extent, long duration, and	Rating according to Table 6 below.	Rating according to Table 6 below.	Rating according to Table 6 below.

CLIMATE CHANGE IMPACTS OR RISKS	IMPACT OF CLIMATE CHANGE MANIFESTATIONS ON THE PROJECT	IMPACT OF THE PROJECT ON CLIMATE CHANGE ADAPTATION OR RESILIENCE	IMPACT OF PROJECT ON GREENHOUSE GAS EMISSIONS
irreversible effects would be considered highly significant.			
9. **Residual risk -** The residual risk is a measure of the remaining environmental or social risk after mitigation measures or controls have been implemented. Residual risk is the risk "left over" after mitigation measures or controls have been applied.	Rating according to Table 6 below.	Rating according to Table 6 below.	Rating according to Table 6 below.

Table 4:Ranking of Evaluation Criteria.

Effect	**Duration**	
	Short term	Less than 2 years
	Medium term	Between 2-10 years
	Long term	Between 10-25 years
	Permanent	Over 25 years or resulting in a permanent and lasting loss
	Extent	
	Localised	Impacts affect a small area of a few hectares in extent. Often only a portion of the project area.
	Study area	The proposed site and its immediate surroundings.
	Municipal	Impacts affect the Local Municipality, or any towns within the municipality.
	Regional	Impacts affect the wider area or the Province as a whole.
	National	Impacts affect the entire country.
	International/Global	Impacts affect other countries or have a global influence.
	Probability	
	Definite	More than 90% sure of a particular fact or impact. Should have substantial supportive data.
	Probable	Over 70% sure of a particular fact, or of the likelihood of that impact occurring.
	Possible	Only over 40% sure of a particular fact, or of the likelihood of an impact occurring.
	Unsure/Unlikely	Less than 40% sure of a particular fact, or of the likelihood of an impact occurring.
Irreplaceable loss of resources	**Irreplaceable loss of resources**	
	Limited	Loss or impact on replaceable or regenerable resources. Restoration is simple and effective.
	Moderate	Resources are degraded or lost, with replacement possible but difficult, costly, or time-consuming.
	High	Major loss of significant resources or ecosystems that are largely irreplaceable. Restoration is technically possible but not guaranteed.

	Very High	Permanent loss of **unique and irreplaceable** resources with no viable replacement or restoration pathway.
Mitigation potential	**Impact reversibility and mitigation potential**	
	Easy	The impact can be easily, effectively and cost effectively mitigated/reversed
	Moderate	The impact can be effectively mitigated/reversed without much difficulty or cost
	Difficult	The impact could be mitigated/reversed but there will be some difficultly in ensuring effectiveness and/or implementation, and significant costs
	Very Difficult	The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly
Severity (intensity) See Table 5 below	**Severity (intensity)**	
	Slight	Slight impacts or benefits on the affected system(s) or party(ies)
	Moderate	Moderate impacts or benefits on the affected system(s) or party(ies)
	Severe/Beneficial	Severe or intense impacts or benefits on the affected system(s) or party(ies)
	Very severe/very beneficial	Very severe or very intense impacts on or very high benefits to the affected system(s) or party(ies)
Residual Risk	**Residual Risk**	
	Low	There is a low risk that additional environmental & social (E&S) impacts will arise after mitigation measures have been effectively implemented.
	Moderate	There is a moderate risk that additional E&S impacts will arise after mitigation measures have been effectively implemented.
	High	There is a high risk that additional E&S impacts will arise after mitigation measures have been effectively implemented but not sufficient enough to stop the project from proceeding.

	Very High	There is a very high risk that additional E&S impacts will arise after mitigation measures have been effectively implemented and proceeding with the project should be seriously questioned.

Table 5: Impacts Severity (Intensity) Rating

Impact severity *(The severity of negative impacts, or how beneficial positive impacts would be on an affected system or affected party)*	
Very severe	**Very beneficial**
An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated. For example the permanent loss of forested land with very high carbon content.	A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit. For example the substantial improvement in energy efficiency.
Severe	**Beneficial**
Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming, or some combination of these. For example, the clearing of forest vegetation with high carbon content.	Long term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these. For example an increase in energy efficiency.
Moderately severe	**Moderately beneficial**
Medium to long term impacts on the affected system(s) or party (ies), which could be mitigated. For example constructing a road where there was vegetation with a low conservation value or low carbon content.	A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way. For example, a 'slight' improvement in energy efficiency.
Slight	**Slightly beneficial**
Medium or short term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary. For example a temporary loss of vegetation and carbon content.	A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.
No effect	**Don't know/Can't know**
The system(s) or party(ies) is not affected by the proposed development.	In certain cases it may not be possible to determine the severity of an impact.

Significance Ratings

All feasible alternatives and the "no-go option" should be equally assessed in order to evaluate the significance of the impacts both before and after mitigation. The "residual" impacts (that remain after mitigation measures are taken into account) can also be described.

All impacts must have a "cause and comment", a significance rating before mitigation, after mitigation and for the no-go option. Impacts should also indicate applicable mitigation measure/ recommendations to reduce the impact significance.

Table 6: Description of Issues Level Significance Ratings.

SIGNIFICANCE RATE	DESCRIPTION	COLOUR CODE
	NEGATIVE	
LOW	The climate change related impacts on this issue are acceptable and mitigation, while desirable, is not essential. The impacts on the issue by themselves are insufficient, even in combination with other low impacts, to prevent the development being approved. Impacts on this particular issue will result in negative medium to short term effects on the social and/or natural environment.	LOW (-)
MODERATE	The climate change related impacts on this issue are important and require mitigation. The impacts on this issue are, by themselves, insufficient to prevent the implementation of the project, but could in conjunction with other issues with moderate impacts, prevent its implementation. Impacts on this particular issue will usually result in a negative medium to long-term effect on the social and/or natural environment.	MODERATE (-)
HIGH	The climate change related impacts on this issue are serious, and if not mitigated, they may prevent the implementation of the project. Impacts on this particular issue would be considered by society as constituting a significant and usually a long-term change to the natural and/or social environment.	HIGH (-)
VERY HIGH -	The climate change related impacts on this issue are VERY serious, and probably cannot be mitigated, and may represent a "fatal-flaw" to the implementation of the project. Impacts on this	VERY HIGH (-)

SIGNIFICANCE RATE	DESCRIPTION	COLOUR CODE
	particular issue would be considered by society as constituting a very severe and usually permanent or very long-term changes to the natural and/or social environment.	
	POSITIVE	
LOW +	A short to medium term and negligible climate change related benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.	LOW (+)
MODERATE +	A medium to long term climate change related benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way. For example a 'slight' improvement in energy efficiency.	MODERATE (+)
HIGH +	A long term impact and substantial climate change related benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these. For example a material increase in energy efficiency.	HIGH +-)
VERY HIGH +	Impacts on this particular climate change related issue would be considered by society as constituting highly beneficial and usually a long-term positive change to the natural and/or social environment. For example, the establishment and formal proclamation of a nature reserve with a high carbon content.	VERY HIGH (+)