

1. INTRODUCTION

1.1 BACKGROUND

Water requirements in parts of the Limpopo and Mpumalanga Provinces of South Africa are expected to increase significantly due to the expansion of current activities as well as new and proposed developments in the region, particularly in the mining sector. **The purpose and need for the proposed project are, therefore, to provide physical infrastructure (a storage dam and associated bulk distribution system and pump stations) that will enable new allocations and the reallocation of water to meet current and future water needs of all sectors within the middle parts of the Olifants catchment, as well as parts of the Mogalakwena/Sand catchments.**

To meet water demands and associated delivery deadlines, the Department of Water Affairs and Forestry commissioned the Olifants River Water Resources Development Project (ORWRDP) that comprises two phases:

- Phase 1 involves the raising of Flag Boshielo Dam by 5 m. Necessary authorisations for this activity have been obtained. Construction is underway and is scheduled for completion by March 2006.
- Phase 2 involves the development of additional water resource infrastructure within the middle parts of the Olifants Water Management Area (WMA). Phase 2 is the focus of current environmental investigations, including this Environmental Impact Report (EIR).

The focus of this project is the middle parts of the Olifants River catchment in the Limpopo and Mpumalanga Provinces of South Africa. This area, with its urgent water demands, is bounded by Burgersfort in the east, Mokopane in the north-west, Polokwane in the north and the proposed dam in the south.

The historic development of the Olifants River basin is characterised by developments associated with the farming potential of the soil and the mineral wealth of the region. The greater part of the project area is underlain by the mineral rich Bushveld Igneous Complex.

The Department of Water Affairs and Forestry has undertaken several previous investigations to identify options to supply water from the middle parts of the Olifants and Steelpoort Rivers for different purposes. These options have included supplying Polokwane and Mokopane with water from the Olifants River and investigating options to supply primary water to the communities on the Nebo Plateau from the Steelpoort River and from local groundwater resources.

Since these earlier investigations were conducted, the water demand requirements in the area have changed significantly due to rapid expansion within the mining sector on the eastern limb of the Bushveld Igneous Complex. To secure the water necessary for their initial development needs, the mining sector has leased, for a five-year period, an under-utilised portion of water from the irrigation sector. The raising of Flag Boshielo Dam will also be able to provide water in the short-term to the mining sector once this lease agreement has expired.

However, beyond the short-term time horizon, it is deemed necessary to provide additional water storage and bulk pumping and conveyance infrastructure to enable new allocations and the transfer or reallocation of water use rights between different geographic areas within the ORWRDP area, and between different sectors, for example, irrigated agriculture and mining/industry. The purpose of this Environmental Impact Assessment (EIA) is to evaluate whether this can be done on an environmentally sustainable basis, for the development of the region.

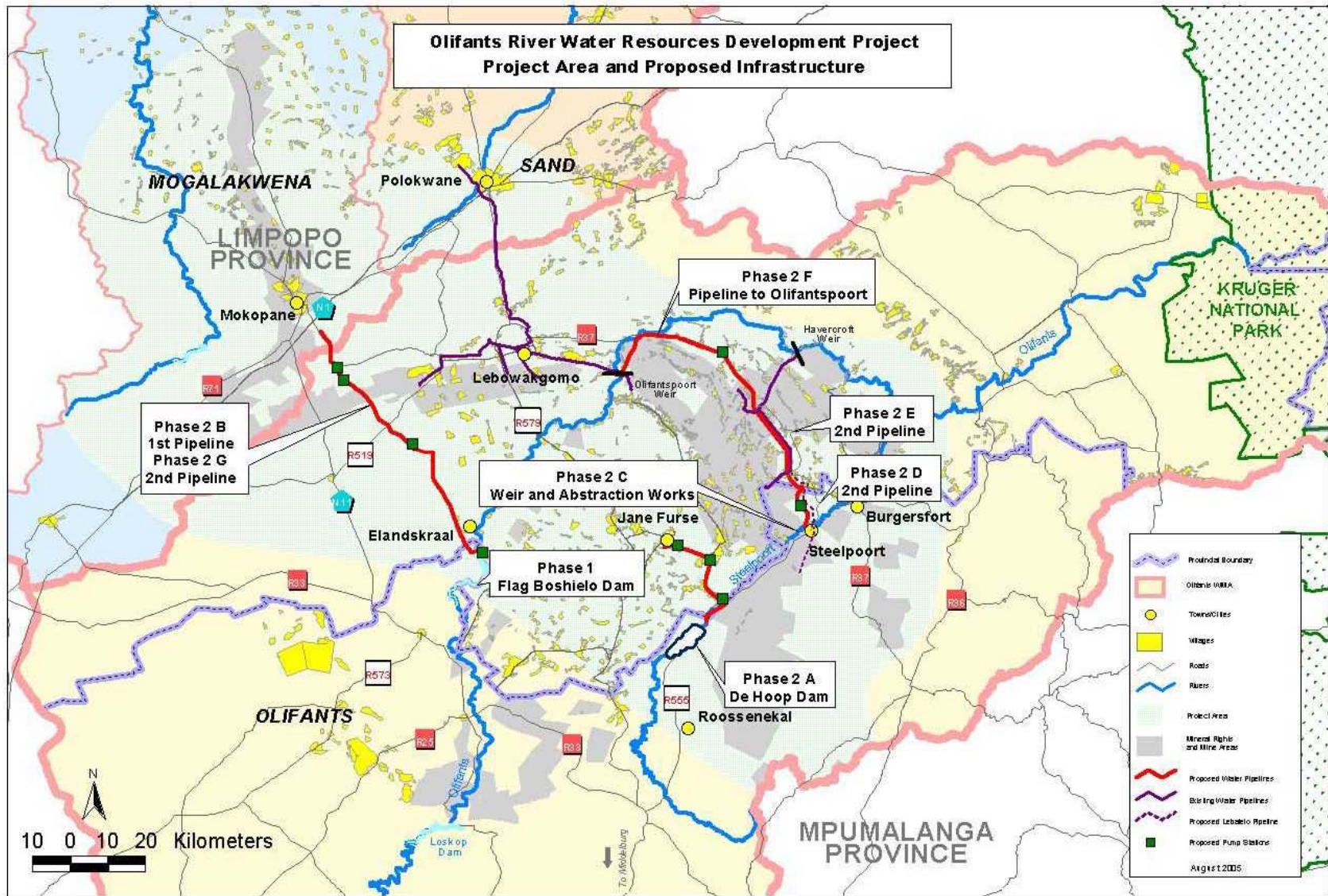
As stated in the National Water Act (Act 36 of 1998), for each area of the country, there will be a number of possible solutions to balance, or “reconcile”, water requirements with water availability. The middle part of the Olifants River catchment is being handled in the same way. To this end, for the ORWRDP, the Department of Water Affairs and Forestry has undertaken a number of investigations to identify optimal solutions. In terms of the current suite of investigations, for all disciplines, this involved a Screening Phase (during which a preferred scheme was identified) and the Feasibility Planning Phase (into which this EIA for the preferred scheme is housed).

The preferred scheme, as selected by the Department of Water Affairs and Forestry, together with the Limpopo and Mpumalanga Provincial Governments, and in consultation with a broad range of stakeholders, is illustrated in Figure 1 and comprises the following infrastructure:

- The construction of the proposed De Hoop Dam on the Steelpoort River. This component of the proposed project also involves realignment of a section of the provincial road between Steelpoort and Stoffberg (the R555) around the dam basin.
- The construction of three gauging weirs on the Steelpoort River, one above and one below De Hoop Dam and one near the confluence of the Steelpoort and the Olifants Rivers.
- The construction of a pipeline, associated pump stations, balancing dams, off-takes and reservoirs from Flag Boshielo Dam to Mokopane.
- The construction of a branch pipeline, associated pump stations, balancing dams, off-takes and reservoirs from the De Hoop Dam/Olifantspoort Weir pipeline or directly from the De Hoop Dam to Jane Furse. An approximate route for this pipeline has been determined, but must still be finalised.
- The construction of a pipeline, associated pump stations, balancing dams, off-takes and reservoirs from the De Hoop Dam along the R37 (between Burgersfort and Lebowakgomo) past Atok Mine to the Olifantspoort Weir. An alternative option for the portion of the pipeline that runs from De Hoop Dam to the town of Steelpoort is to release water into the Steelpoort River for abstraction at the town of Steelpoort. The infrastructure for this alternative includes an abstraction weir, pumpstation and desilting dam (both options are assessed throughout this report).

It is important to note that although all project components are part of a single project, the components will be constructed in phases, as demands require. The timing and phasing of the infrastructure is currently anticipated as De Hoop Dam and gauging weirs (2009), Jane Furse pipeline by 2009, Flag Boshielo to Mokopane pipeline (2009), Steelpoort Weir (2011) and the sections of the Steelpoort (or De Hoop) to Olifantspoort Weir pipeline between 2011 and 2017.

Figure 1 Map showing proposed project infrastructure



Additional information on the Screening Phase and Scoping that formed part of this EIA can be found in two main documents:

- Department of Water Affairs and Forestry (May 2004). Olifants River Water Resources Development Project (ORWRDP). Environmental Authorisation Study. Phase 1: Screening Investigation. DWAF Report Number: PWMA04/B50/00/1904.
- Department of Water Affairs and Forestry (October 2004). Olifants River Water Resources Development Project (ORWRDP). Environmental Impact Assessment (12/12/20/553). Infrastructure Development. Final Scoping Report. Authorisation Study. Phase 1: Screening Investigation. DWAF Report Number: PWMA04/B50/00/2204.

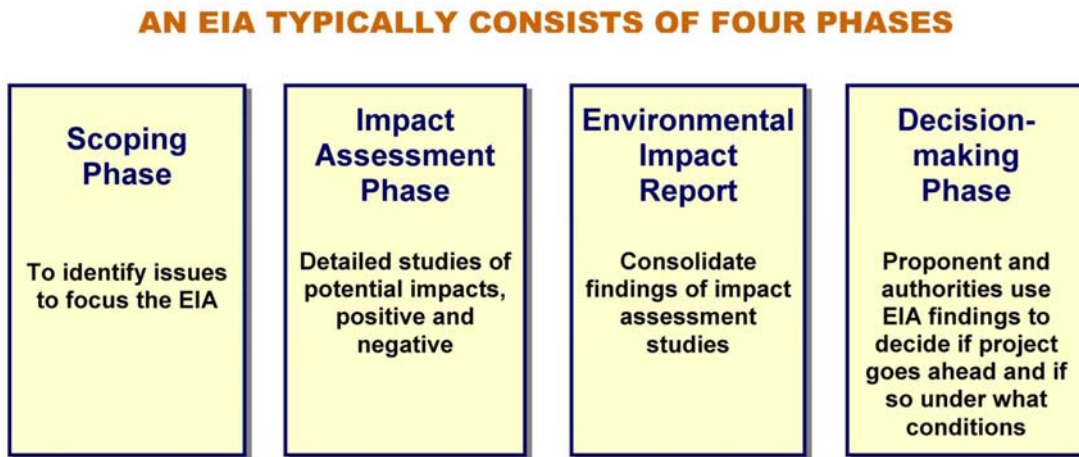
The above physical infrastructure comprises Phase 2 of the ORWRDP and is central to the environmental authorisation process currently being undertaken by the Department of Water Affairs and Forestry and its appointed Professional Service Providers (PSPs).

The planned bulk distribution system will interconnect Flag Boshielo and De Hoop Dams, to enable the supply of water to all users at a higher level of assurance, through the operation of a single system. Existing lawful water use rights/allocations will be honoured, but in some cases, may be reallocated to a different source (such as the current Lebalelo allocations from Flag Boshielo Dam that, in future, are likely to be supplied from De Hoop Dam). This will not make additional water available, but will better distribute the available water to all users from both sources.

1.2 ENVIRONMENTAL AUTHORISATION PROCESS

The environmental authorisation process that has been followed for the physical infrastructural components of the ORWRDP conforms, where applicable and appropriate, to the requirements of the Environment Conservation Act (Act 73 of 1989), the National Environmental Management Act (Act 107 of 1998), the National Heritage Resources Act (Act 25 of 1999), the Minerals and Petroleum Resources Development Act (Act 28 of 2002), and the National Water Act (Act 36 of 1998). Essentially, this EIA is being undertaken in four main phases (Figure 2):

Figure 2 The four principal phases of an Environmental Impact Assessment



- Scoping.
- Impact Assessment.
- Environmental Impact Report (integrated report of findings) – this document.
- Decision making.

Importantly, these four main phases are underpinned and supported by other sub-phases, for example, Screening, pre-application consultation with the environmental Authorities, the preparation and submission of an application for authorisation to undertake listed activities, the preparation and submission of a Plan of Study for Scoping, followed by a Scoping Report and, thereafter, by a Plan of Study for Impact Assessment (Appendix 1). This EIR is the product of the Impact Assessment. It was circulated and discussed in the public domain after which it has been submitted in a final form to the environmental Authorities for their consideration and decision-making.

Should the proposed project be authorised by the Department of Environmental Affairs and Tourism (DEAT), in close collaboration with the Mpumalanga Department of Agriculture and Land Administration and the Limpopo Department of Finance and Economic Development and other relevant authorities, an Environmental Management Plan (EMP) will be prepared. The purpose of the EMP is to transfer the mitigation measures as stipulated in the Record of Decision into measurable actions that will be implemented by the development proponent, viz. the Department of Water Affairs and

Forestry and/or its implementing agent (as may be decided by the Minister of the Department of Water Affairs and Forestry). This will be inclusive of monitoring programmes for construction and operation.

Activities to date and proposed future actions are detailed in Chapter 3 and Figure 5, respectively.

1.3 REQUIREMENTS OF THE DEPARTMENT OF MINERALS AND ENERGY

Running concurrently with the environmental authorisation process was a regulated process to obtain authorisation, from the Department of Minerals and Energy (DME) to utilise various quarry and borrow sites required for sourcing construction materials.

This process was conducted according to the provisions of the Minerals and Petroleum Resources Development Act (Act 28 of 2002) (promulgated on 3 May 2004) and the exemptions granted to the Department of Water Affairs and Forestry as per Section 106 (1) of the Act (Government Notice R 762 on 25 June 2004). Yet, in accordance with Section 106 (2) of the Act these exemptions still require the Department of Water Affairs and Forestry to submit an Environmental Management Plan for approval in term of Section 39(4) of the Act.

1.4 OTHER COMPONENTS AND INVESTIGATIONS FEEDING INTO THE EIA

In addition to the environmental authorisation process for the proposed project, there were a number of elements and project components undertaken by the Department of Water Affairs and Forestry that did not require environmental authorisation. Nevertheless, these components of the overall ORWRDP are important and have fed into the understanding of environmental aspects as documented in this EIR. These components were:

- ❑ A description of some benefits of large dams.
- ❑ Provision of the Reserve for the Steelpoort River.
- ❑ Water conservation and demand management.
- ❑ A brief outline of Catchment Management Agencies.
- ❑ Operational and financial aspects of the project.

- South African/Mozambican Agreements and South African Development Community (SADC) Protocols on Shared Water Courses.
- Transfer of water from the Vaal River System.
- Socio-economic aspects related to water trading.

It should be noted that the entire ORWRDP, including this environmental assessment, was informed by screening that was undertaken as a first stage of project planning and investigation.

1.5 THE ENVIRONMENTAL IMPACT ASSESSMENT TEAM

ACER (Africa) Environmental Management Consultants (ACER) and the CSIR Environmentek (CSIR) were appointed as technical consultants to deal with the environmental aspects related to the infrastructure developments for Phase 2. Zitholele Consulting in conjunction with Golder Associates were appointed to undertake public participation in support of the environmental investigations and authorisation process. Collectively, the four firms constitute the EIA Team.

1.6 THE ASSESSING AND COMMENTING AUTHORITIES

The National Department of Environmental Affairs and Tourism is the lead authority for this EIA, and will make the final decision on whether the proposed project may go ahead or not, and under what conditions. In fulfilling this responsibility, DEAT will collaborate closely with the Mpumalanga Department of Agriculture and Land Administration and the Limpopo Department of Finance and Economic Development. DEAT will also use the inputs from other relevant government departments and agencies, for example, the Department of Minerals and Energy, the Department of Land Affairs, the Mpumalanga Department of Transport, the Limpopo Roads Agency, the South African Heritage Resources Agency, and district and local municipalities, before making a final decision.

1.7 ENVIRONMENTAL IMPACT REPORT

The purpose of the EIR is to collate, integrate, summarise and evaluate the findings of the specialist studies and to consider each of the issues raised during Scoping. This aims at providing the reader with a holistic understanding of the potential positive and negative impacts of the proposed development in a singular congruent unit. A number of inputs have informed the content of the EIR (Figure 3).

It is important to note that the EIR does not decide if a development project should go ahead. Rather, the document provides decision-makers with appropriate information to take informed decisions.

The EIR has been structured as shown in Table 1. The EIR is supported by the following documentation:

- An Issues & Response Report (and Addendum) that details the issues raised through the public participation process and highlights how these issues have been considered either in the EIR or through the specialist studies.
- The full texts of the specialist studies are available in two separate volumes.
- A summary of the Draft EIR, available in English, Sepedi, and Afrikaans, for those stakeholders that prefer an overview of just the essence of the findings.

Figure 3 Inputs into the Environmental Impact Report

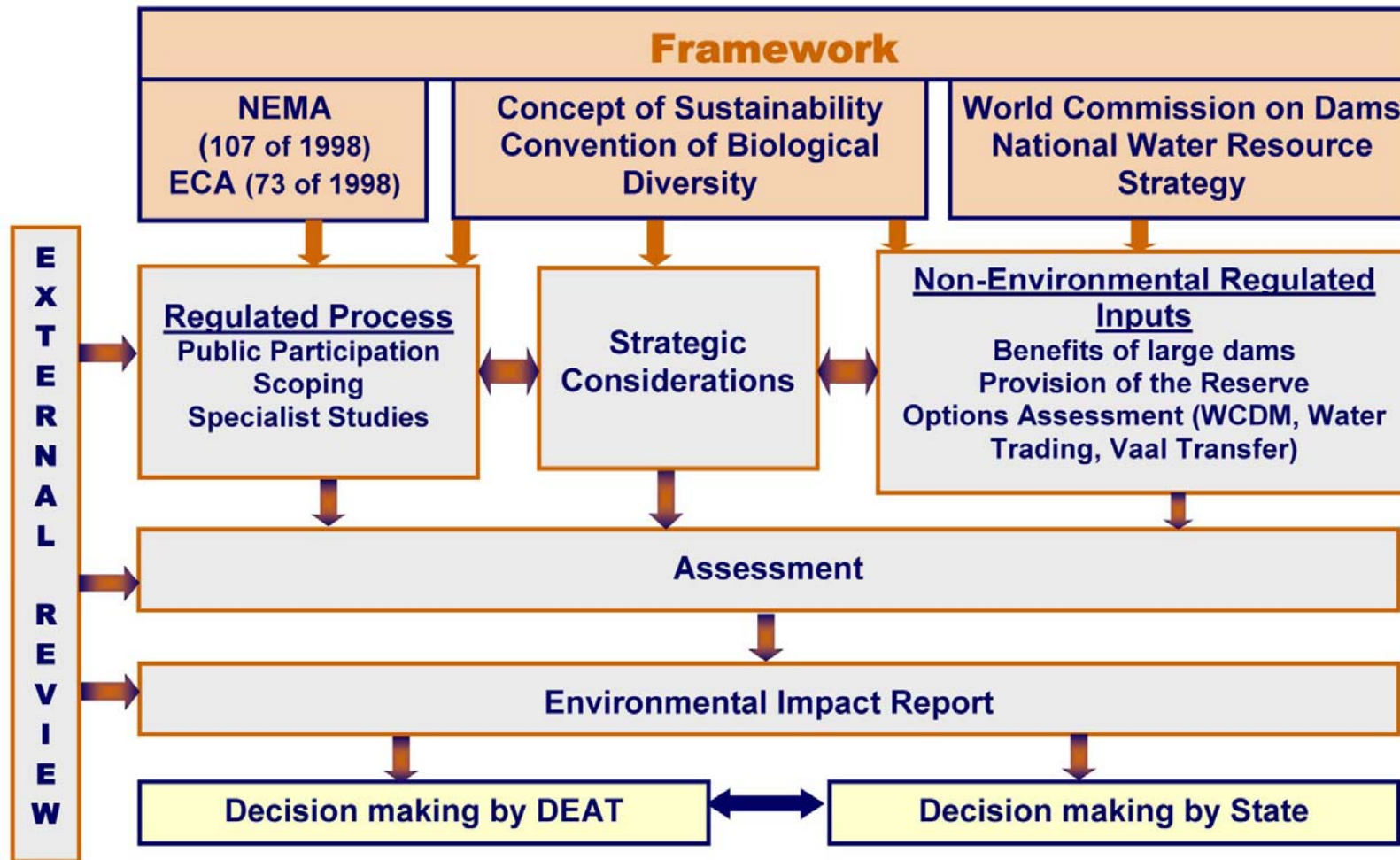


Table 1 Structure of the Environmental Impact Report

These Chapters provide an introduction and describe the assessment framework and process	Chapter 1 Introduction	Provides the purpose and need for the proposed project, supported by background information
	Chapter 2 The assessment framework	Describes the framework for assessment that was adopted for this project
	Chapter 3 The EIA process	Describes the process that was followed during the environmental authorisation process
These Chapters consider the current situation	Chapter 4 The Affected Environment	Describes the receiving environment in which the proposed project will be implemented
	Chapter 5 Strategic considerations	Provides a strategic perspective on the receiving environment and the proposed project
This Chapter describes the proposed project and evaluates the potential impacts on the environment	Chapter 6 Proposed project infrastructure	Describes all infrastructural components and alternatives that have been considered
These Chapters present the findings of the different specialist studies and evaluate issues and potential impacts on the environment	Chapter 7 Non-Environmental Regulatory Inputs	Presents inputs on aspects not governed by the EIA Regulations but which are important to the wider understanding of water resources management and development
	Chapter 8 Specialist study findings	Presents the findings and outcomes of the specialist studies commissioned to address specific issues identified during Scoping
	Chapter 9 Integration	Integrated results addressing issues and associated impacts as expressed in the Final Scoping Report
	Chapter 10 Assessment and Mitigation	Integrated results assessing issues and associated impacts without and with mitigation, including possible mitigation measures
This Chapter considers management measures and mechanisms that could be implemented should the proposed project be authorised	Chapter 11 Framework for an Environmental Management Plan	Outlines a framework for the Environmental Management Plan that will be prepared for the proposed project
This Chapter provides conclusions and recommendations	Chapter 12 Conclusions and recommendations	Evaluates the suitability of the project and considers how the project is likely to influence the region. It highlights the positive and negative effects of the proposed project