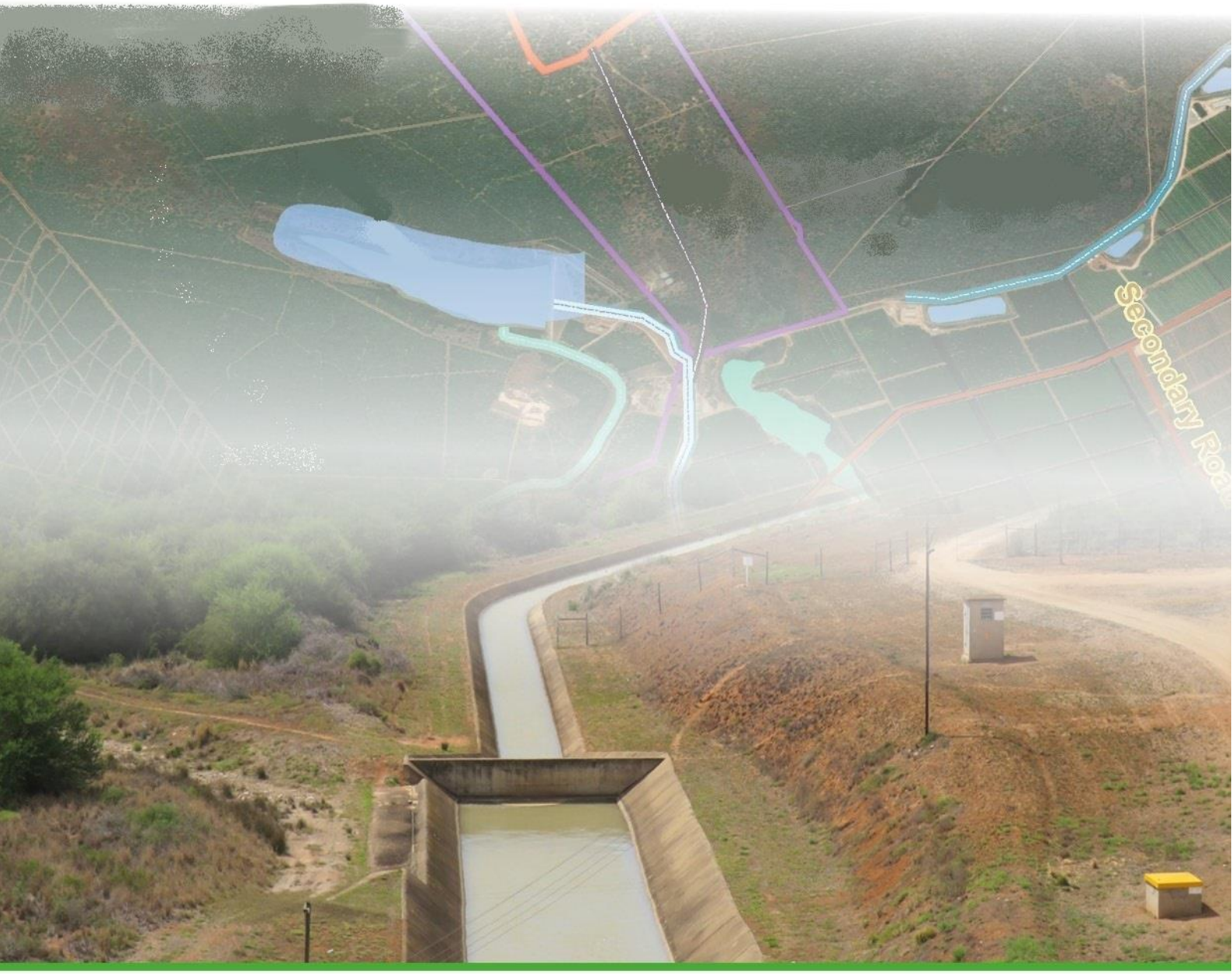
water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

GA Environment

DRAFT SCOPING REPORT:
THE PROPOSED LOWER COERNEY BALANCING DAM



DRAFT SCOPING REPORT
THE PROPOSED LOWER COERNEY BALANCING DAM,
SUNDAYS RIVER VALLEY LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE

Report No.1: October 2022

Environmental best practice, safety and sustainability

DRAFT SCOPING REPORT
for

THE PROPOSED LOWER COERNEY BALANCING DAM, SUNDAYS RIVER VALLEY LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE

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5 October 2022

PROJECT INFORMATION

Title:	Environmental Impact Assessment Process for the Proposed Lower Coerney Balancing Dam, Sundays River Valley Local Municipality, Eastern Cape Province
Competent Authority:	Department of Forestry, Fisheries and the Environment (DFFE)
DFFE Reference No.:	Not yet assigned
Applicant:	Department of Water and Sanitation
Environmental Assessment Practitioner:	GA Environment (Pty) Ltd.
Compiled by:	Vukosi Mabunda*, MSc, Reg. EAP & Pr.Sci.Nat*
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Date:	05 October 2022

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2	05 October 2022	Final for Public Review	Vukosi Mabunda	Nkhensani Khandlhela

SIGNING OF THE ORIGINAL DOCUMENT

Original	Prepared by	Reviewed by	Approved by
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Version 0	Signature: 	Signature: 	Signature: 

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Mr. Mike Primmer	Director	Lower Sundays River Water Users Association (LSRWUA)

AFFIRMATION OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

I ***Vukosi Mabunda***, a Registered EAP employed by ***GA Environment (Pty) Ltd*** declare that the information provided in this report is correct and relevant to the activity / project, that comments from interested and affected parties have been incorporated into this report that the information was made available to interested and affected parties for their comments.

05 October 2022

SIGNATURE OF EAP **DATE**

EXECUTIVE SUMMARY

1 INTRODUCTION

The Department of Water and Sanitation (DWS, hereafter) is a state organ that exists to ensure equitable access to water for all South Africans as well as to protect, use, develop, conserve, manage and control water resources. In 2017, DWS undertook a feasibility study to assess five (5) potential dam sites for the Algoa Water Supply System (AWSS). The Lower Coerney site was eventually found to be the most feasible and most viable for the construction of the required balancing dam. Subsequently, GA Environment (Pty) Ltd was appointed by DWS, as independent Environmental Assessment Practitioners (EAP) to undertake the Scoping and Environmental Impact Assessment (EIA), and the Water Use License Application (WULA) process for the proposed construction of the Lower Coerney Balancing Dam, as part of the AWSS. The objectives of the balancing dam are to:

- Limit risks of shortfall in supply to the Nelson Mandela Bay Municipality and the Lower Sundays River Government Water Scheme (LSRGWS);
- Remove potential operating system constraints for sustainable delivery of bulk Orange River water supply to the LSRGWS and NMBM, for water requirements up to 2040; and
- Limit operational risks to acceptable levels.

The existing Scheepersvlakte Dam is a balancing facility for water supply to the Lower Sundays River Water User Association (LSRWUA) and the Nelson Mandela Bay Metropolitan Municipality (NMBM) for emergency supply. The need for a new balancing dam on the Scheepersvlakte Farm is due to the inadequate water supply owing to the smaller capacity of the existing Scheepersvlakte Dam to provide water supply to NMBM, during an emergency. The main purpose of the proposed new balancing dam at the Coerney site is to eliminate the operational and balancing storage limitations imposed by the Scheepersvlakte Dam.

This Scoping report is intended to guide the EIA process and the required specialist studies by:

- Providing an overview of the legal requirements with regards to the proposed dam;
- Providing a project description of the proposed dam as well as the anticipated environmental and social impacts that will be further investigated in the EIA phase;
- Setting the scope of the EIA process as well as the Terms of Reference (ToR) for the proposed specialist studies; and
- Outlining the approach and methodologies to be used in the Scoping and EIA phase including the impact assessment methodology.

2 ENVIRONMENTAL IMPACT ASSESSMENT AND PUBLIC PARTICIPATION PROCESS

In terms of section 24(2) of NEMA, the Minister and/or any MEC in concurrence with the Minister may identify activities that require authorisation as these activities may negatively affect the environment. Environmental Impact Assessment (EIA) Regulations were promulgated in December 2014 (as amended) in terms of Section 24(5) and Section 44 of the National Environmental Management Act (NEMA), Act 107 of 1998. In terms of the 2017 EIA Regulations, the following listed activities are triggered:

Activity	Description
GN No 983 Listing Notice 1	
Activity 9	The development of infrastructure exceeding 1,000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0.36 metres or more; or (ii) with a peak throughput of 120 litres per second or more
Activity 12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse
Activity 19	The infilling or depositing of any material of more than 10 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m^3 from – (i) A watercourse.
Activity 30	Any process or activity identified in terms of Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
Activity 56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres.
Activity 63	The expansion of facilities or infrastructure for the transfer of water from and to or between any combination of the following— (i) water catchments; (ii) water treatment works; or (iii) impoundments; where the capacity will be increased by 50 000 cubic metres or more per day
GN No 984 Listing Notice 2	
Activity 11	The development of facilities or infrastructure for the transfer of 50,000 cubic metres or more water per day, from and to or between any combination of the following:— (i) water catchments; (ii) water treatment works; or (iii) impoundments.

Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or maintenance purposes undertaken in accordance with a maintenance management plan.
Activity 16	The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall is 5 metres or higher, or where the high-water mark of the dam covers an area of 10 hectares or more.
GN No 985 Listing Notice 3	
Activity 4	The development of a road wider than 4 metres with a reserve less than 13.5 metres. a. Eastern Cape Outside urban areas: (cc) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.
Activity 12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. a. Eastern Cape i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans.
Activity 14	The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeding 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs (a) within a watercourse; (c) if no development setback has been adopted, within 32 meters of a watercourse. a. Eastern Cape i. Outside urban areas: (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.
Activity 18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. a. Eastern Cape i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ii) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined; or

	(kk) A watercourse
Activity 23	The expansion of dams or weirs where the dam or weir is expanded by 10 square metres or more; or (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs— (a) within a watercourse; (b) in front of a development setback adopted in the prescribed manner; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. a. Eastern Cape i. Outside urban areas: (cc) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.

Any person wishing to exercise a water use other than those defined in Schedule 1 of the National Water Act, or an existing lawful use, or a use promulgated by a General Authorisation, requires a water use licence. The activities described below are water uses defined in terms of Section 21 of the National Water Act and need authorisation, which includes licensing. The triggered Section 21 activities are;

(b) storing of water;

(c) impeding or diverting the flow in a watercourse;

(d) engaging in a stream flow reduction activity; and

(i) altering the bed, banks, course or characteristics of a watercourse.

A pre-application meeting was held with various units of the Licencing Authority of the Gqeberha Office of the Department of Water and Sanitation on the 15th of December 2021. During the meeting, the abovementioned Section 21 activities were confirmed.

In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported on to the Department of Forestry, Fisheries and the Environment (DFFE) as the competent authority (the decision-maker).

According to Section (2)(4)(f) of the National Environmental Management Act, the participation of all Interested and Affected Parties (I&APs) must be promoted and all potential I&APs must be informed early and in an informative and proactive way regarding applications that may affect their lives or

livelihood. To give effect to the above sections, it is essential to ensure that there is an adequate and appropriate opportunity for Public Participation (PP) in decisions that may affect the environment.

The findings of the Scoping phase process are included in this Draft Scoping Report which will be made available for comment and review by Interested and Affected Parties (I&APs), which include adjacent landowners, residents as well as various government departments and parastatals, involved in the Public Participation Process (PPP) undertaken to date. The summary of the PPP that commenced in October 2021 is provided as follows:

- Initial site visit and engagement with the Scheepersvlakte Farm Representatives, the Lower Sundays River Water Users Association (LSRWUA) and Die Kooperasie Farm Development;
- A newspaper advertisement was placed on page 6 of the 30th of November 2021 edition of The Herald Newspaper distributed within the Port Elizabeth Region;
- On-site notices presenting the project were erected within the site, local shops, LSRWUA Irrigation Board, Municipal Library, along public roads and areas visible to the public on the 30th of November and 1st of December 2021; and
- Notification letters were compiled and distributed to adjacent landowners and in the Kirkwood residential area on the 30th of November and 1st of December 2021.

This Draft Scoping Report will be placed in public places and made available electronically for Public Review and Comment for the legislated 30 days. SMS, e-mail notifications and telephone calls will be utilised to notify all registered I&Ps about the availability of the Report. An additional public participation process will be undertaken during the EIA phase.

3 ENVIRONMENTAL IMPACTS

Potential risks and key issues identified during the Scoping Phase of the project were based on consultation with I&APs, preliminary specialist investigations, desktop studies and the current state of the site. DFFE will advise on further studies that may be required during the EIA phase. Specialist findings will be assessed and discussed in detail in the Environmental Impact Assessment Report (EIR) that will be provided during the EIA phase for public review and comment.

Chapter 5 of this Draft Scoping report describes the biophysical and social environment of the proposed site and provides a background to ensuring that all potential risks and issues are taken into consideration in all phases of the development. The potential risks and issues identified will be discussed in detail in the EIA report. The potential impacts and key issues identified during the Scoping Phase include the high terrestrial biodiversity sensitivity of the area, but also that a large portion of the western side of the development footprint has already been cleared in preparation for the new

citrus plantation area. As the proposed development falls within an active agricultural area and within a high agricultural sensitivity theme, a major concern would be the impact on agricultural activities. However, the nature and function of the proposed development is to support the agricultural farms in the area. In addition, other key environmental sensitives include aquatic biodiversity, heritage and palaeontological features. Other potential impacts include air and noise impacts, traffic impacts, and disturbance to indigenous vegetation and fauna. These potential impacts will be investigated in further detail during the EIA Phase.

4 ALTERNATIVES

In terms of the EIA Regulations published in Government Notice (GN) R982 of 2014, as amended, feasible and reasonable alternatives must be identified and considered within the EIA process. According to the above-mentioned, an alternative is defined as *"…in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:*

(a) property on which or location where it is proposed to undertake the activity;

(b) type of activity to be undertaken;

(c) design or layout of the activity;

(d) technology to be used in the activity;

(e) operational aspects of the activity; and

(f) includes the option of not implementing the activity."

The alternatives discussed in the DSR are the No-Go Option; property location alternatives, activity alternatives; process alternatives; demand alternatives; and site layout alternatives. The preferred option under each category of alternatives is discussed in detail in **Chapter 6** of this DSR.

5 CONCLUSIONS AND RECOMMENDATIONS

The Scoping Report provides a broader description of the preliminary biophysical and socio-economic issues associated with the proposed Lower Coerney Balancing Dam. A detailed description of the surrounding land use is provided, ensuring that all environmental aspects are highlighted. A comprehensive public participation process was conducted and is discussed in **Chapter 7** of the report.

Subsequent to the review and approval of the Final Scoping Report by DFFE, the Draft EIR and Final EIA Report will be compiled to present an assessment of the impacts of each of the individual activities as well as ascertain the potential cumulative impacts of the development in its entirety. The EIA report

will also outline mitigation measures so that positive impacts can be optimised, and negative impacts minimised for the project to be integrated into the environment sustainably.

LEGISLATIVE REQUIREMENTS FOR A DRAFT SCOPING REPORT

The Environmental Impact Assessment Regulations 2014 (as amended), Government Notice 982, Appendix 2 prescribes the required content of a Scoping Report. These requirements and the sections of the report in which they have been addressed are provided in **Table 1**.

Table 1: Requirements for a Scoping Report

GN 982, Appendix 2 Reference	Content	Reference in report
(2) (a)	**Details of:**	
(2) (a) (i)	The EAP who prepared the report	1.12
(2) (a) (ii)	The expertise of the EAP, including a Curriculum vitae	1.12 & Appendix B
(2) (b)	Location of the activity, including:	1.4
(2) (b) (i)	21-digit Surveyor General code of the property	1.4
2) (b) (ii)	Physical address and farm name (where available)	1.4
(2) (b) (iii)	The coordinates of the boundary of the property (where (2) (b) (i) and (2) (b) (ii) are not	N/A
(2) (c)	**A plan indicating the location of the proposed activity and associated infrastructure, or:**	1.4
(2) (c) (i)	For linear activities: a description and coordinates of the corridor in which the proposed activity is to be undertaken	N/A
(2) (c) (ii)	On land where the property has not been defined, the coordinates within which the activity is to be undertaken	1.4
(2) (d)	**A description of the scope of the proposed activity, including**	
(2) (d) (i)	All listed and specified activities triggered	1.7
(2) (d) (ii)	A description of activities to be undertaken, including associated infrastructure	3
(2) (e)	**A description of the policy and legislative context**	3
(2) (f)	**Motivation for need and desirability for the proposed development**	1.6
(2) (g)	**A full description of the process followed to reach the proposed preferred activity, site** and	6
(2) (g) (i)	Details of all alternatives considered	6
(2) (g) (ii)	Details of public participation process undertaken, including copies of the supporting documents and inputs	7
(2) (g) (iii)	A summary of the issues raised by interested and affected parties, and an indication of the manner in which these issues were incorporated	7
(2) (g) (iv)	The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage, and cultural aspects	5
(2) (g) (v)	The impacts and risks identified, including the nature, significance, consequence, extent, duration and probability	8
(2) (g) (vi)	The methodology used in determining and ranking the nature, significance, consequences etc.	9.4
(2) (g) (vii)	Positive and negative impacts that the proposed activity and alternatives will have on the	8

	environment and on the community that may be affected, focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	
(2) (g) (viii)	Possible mitigation measures that could be applied and level of residual risk	8
(2) (g) (ix)	Outcome of the site selection matrix	6
(2) (g) (x)	If no alternative development locations for the activity were investigated, the motivation for not	6
(2) (g) (xi)	A concluding statement indicating the preferred alternative development location within the	6
(2) (h)	**A Plan of Study for the EIA, including:**	
(2) (h)	A description of the alternatives to be considered and assessed including the option of not	6
(2) (h) (ii)	A description of the aspects to be assessed as part of the environmental impact assessment process	9.4
(2) (h) (iii)	Aspects to be assessed by specialists	9.3
(2) (h) (iv)	A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists	9.3
(2) (h) (v)	A description of the proposed method of assessing duration and significance	9.4
(2) (h) (vi)	An indication of the stages at which the competent authority will be consulted	9.6
(2) (h) (vii)	Particulars of the public participation process that will be conducted during the environmental impact assessment process	9.6
(2) (h) (viii)	A description of the tasks that will be undertaken as part of the environmental impact assessment process	9.6
(2) (h) (x)	Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored	8
(2) (i)	**Undertaking under oath or affirmation by the EAP in relation to:**	
(2) (i) (i)	The correctness of the information provided in the report	Page 1
(2) (i) (ii)	The inclusion of comments and inputs from stakeholders and interested and affected parties	Page 1
(2) (i) (iii)	Any information provided by the EAP to interested and affected parties and any responses by	Page 1
(2) (j)	An undertaking under oath or affirmation by the EAP in relation to the level of agreement	Page 1
(2) (k)	**Any specific information required by the competent authority**	To be Confirmed
(2) (l)	**Any other matter required in terms of Section 24(4) (a) and (b) of the Act**	N/A

DRAFT SCOPING REPORT FOR THE PROPOSED LOWER COERNEY BALANCING DAM

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS / ACRONYMS

ADD	Average Day Demand
AWSS	Algoa Water Supply System
CBA	Critical biodiversity area
CMA	Catchment Management Agency
CPA	Communal Property Association
DEDEAT	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
DN	Nominal diameter
DSR	Draft Scoping Report
DWA	Department of Water Affairs (currently Department of Water and Sanitation)
DWAF	Department of Water Affairs and Forestry (which then changed to DWA and is currently the Department of Water and Sanitation)
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act (Act 73 of 1989
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Plan
EMPR	Environmental Management Programme Report

ESA	Ecological Support Area
FSR	Final Scoping Report
FSL	Full Supply Level
GA	General Authorisation
Ha	hectares
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
LSRGWS	Lower Sundays River Government Water Scheme
LSRWUA	Lower Sundays River Water Use Association
Mℓ	Mega litre
NEMA	National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998)
NMBM	Nelson Mandela Bay Municipality
SACNASP	South African Council for Natural Scientific Professions
SBDM	Sarah Baartman District Municipality
SRIB	Sundays River Irrigation Board
SRVM	Sundays River Valley Local Municipality
WUA	Water Use Authorisation
WUL	Water Use Licence
WULA	Water Use Licence Application
NWA	National Water Act (Act No. 36 of 1998)
mamsl	Meters above mean sea level
NOC	Non-overspill Crest
RDF	Recommended Design Flood
SEF	Safety Evaluation Flood
KPC	Kirkwood Primary Canal
NGP	Nooitgedacht / Nooitgedagt Pipeline
CA	Competent Authority
HIA	Heritage Impact Assessment
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
WTW	Water Treatment Works

GLOSSARY OF TERMS

This section provides a catalogue of terms and definitions, which may be used in this report and, or other future waste management plans and documents. Where more than one definition for a term exists in the literature, additional definitions have been provided for clarity.

Term	Definition
Alien Invasive Species	Species of plants, animals or other organisms that are not indigenous to a region and which easily spread and destroy the indigenous plant species, taking over an area and causing biological and socio-economic harm.
Basic Assessment Process	An environmental assessment process that is undertaken in line with Listing Notices 1 and 3 of the NEMA EIA Regulation to obtaining Environmental Authorisation.
Competent Authority	An organ of the state charged by the National Environmental Management Act (NEMA) with evaluating the environmental impact of an activity and, where appropriate, with granting or refusing an environmental authorisation in respect of that activity.
Conservation Plan Areas (C-Plan Areas)	A tool developed by the Gauteng Department of Agriculture and Rural Development (GDARD) to identify sensitive areas. The main purpose of this tool is to: • To serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process; • Inform protected area expansion and biodiversity stewardship programmes in the province; and serve as a basis for the development of Bioregional Plans in municipalities within the province. Some of the aspects that inform the identification of C-Plan Areas include Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), Watercourses, Ridges, Protected Areas, etc.
Critical Biodiversity Area	Areas that are deemed important to conserve ecosystems and species. For this reason, these areas require protection.
Cultural significance	Aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.
Dam	A barrier constructed to hold back water and raise its level, forming a reservoir used to generate electricity or as a water supply.
Development	The building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.
Ecological Support Area	Areas that support the ecological functioning of protected areas or CBAs or provide important ecological infrastructure.
Environmental Assessment Practitioner	Individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instruments introduced through regulations
Environmental Authorisation	This is a decision by a Competent Authority to authorise a listed activity in terms of the National Environmental Management Act (NEMA). The authorisation means that

Term	Definition
	a project, either in totality or partially, can commence subject to certain conditions. The Competent Authority has a right to refuse to grant authorisation for a project in totality or partially.
Environmental Impact Assessment Process	An environmental assessment process that is undertaken in line with Listing Notice 2 of the NEMA EIA Regulations with the aim of obtaining Environmental Authorisation.
Environmental Management Programme	A programme with set objectives and timeframes that seek to achieve a required end state and describes how activities that have or could have an adverse impact on the environment will be mitigated, controlled and monitored.
Flora	Plant life that occurs in a specific geographical region and/or habitat.
Fauna	Animal life that occurs in a specific geographical region and/or habitat.
Heritage Resource	Any place or object of cultural significance as defined by the National Heritage Resources Act.
Indigenous Vegetation	Plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.
Interested and Affected Party (I&AP)	In relation to an application for Environmental Authorisation, this refers to an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 42 of the NEMA EIA Regulations. This party will ideally be interested in the development but also affected by the proposed application and have a certain interest in the application.
Regulated area of a watercourse	• The outer edge of the 1:100-year flood line and /or delineated riparian habitat whichever is the greatest measured from the middle of a river, spring, natural channel, lake or dam; • In the absence of a determined 1:100-year flood line or riparian area, the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); • 500m radius from the delineated boundary of any wetland or pan.
Riparian Area	A Habitat that includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with composition and physical structure distinct from those of adjacent land areas.
Screening	Screening determines whether or not a development proposal requires an environmental assessment, and if so, what level of assessment is appropriate Screening is therefore a decision-making process that is initiated during the early stages of the development of a proposal.
Threatened or Protected Species	These refer to either plants or animals that are at threat of extinction or are protected due to their high conservation value or national importance.
Urban Edge	A demarcated edge of an area that is used as a land use management tool to manage, direct and control the outer limits of development growth around an urban area. The aim is to control urban sprawl due to its associated adverse impacts.
Watercourse	(a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and

Term	Definition
	(d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks;
Wetland	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

1 INTRODUCTION

1.1 Background

The Department of Water and Sanitation (DWS, hereafter) is a state organ that exists to ensure equitable access to water for all South Africans as well as to protect, use, develop, conserve, manage and control water resources. In 2017, DWS undertook a feasibility study to assess five (5) potential dam sites for the Algoa Water Supply System (AWSS). The Lower Coerney site was eventually found to be the most feasible and most viable for the construction of the required balancing dam. Subsequently, GA Environment (Pty) Ltd was appointed by DWS, as independent Environmental Assessment Practitioners (EAP) to undertake the Scoping and Environmental Impact Assessment (EIA) and the Water Use License Application (WULA) process for the proposed construction of the Lower Coerney Balancing Dam as part of the AWSS. The objectives of the balancing dam are to:

- Limit risks of shortfall in supply to the Nelson Mandela Bay Municipality and the Lower Sundays River Government Water Scheme (LSRGWS);
- Remove potential operating system constraints for the sustainable delivery of bulk Orange River water supply to the LSRGWS and NMBM, for water requirements up to 2040; and
- Limit operational risks to acceptable levels.

The existing Scheepersvlakte Dam is a balancing facility for water supply to the Lower Sundays River Water User Association (LSRWUA) and the Nelson Mandela Bay Metropolitan Municipality (NMBM) for emergency supply. The need for a new balancing dam on the Scheepersvlakte Farm is due to the inadequate smaller capacity of the existing Scheepersvlakte Dam to provide water supply to NMBM during an emergency. The main purpose of the proposed new balancing dam at the Coerney site is to eliminate the operational and balancing storage limitations imposed by Scheepersvlakte Dam.

The main advantage of the dam site is that it will enable the dam to be operated under gravity. The dam will be filled from the Kirkwood Primary Canal via a new pipeline and the dam will supply the Nooitgedagt Water Treatment Works (WTW) via a new connecting pipeline to the existing 1 400 mm Nooitgedagt pipeline. The proposed Coerney Dam will be filled, and topped up, over a longer filling period through gravity supply. The existing Scheepersvlakte Dam and proposed Coerney Dam, although filled from the same source, will be operated separately under normal operations. The proposed Coerney Dam will be used as balancing storage for NMBM and the Scheepersvlakte Dam will revert to its original function and will only be used as balancing storage for irrigation. See **Table 2** for a summary of key technical details.

Table 2: Technical background information

Aspect	Detail
Type of Dam:	Homogeneous Earthfill Embankment Dam.
Main advantage of dam site:	The dam will be filled and supply water under gravity (no need for water to be pumped).
Source of water:	Kirkwood Primary Canal via a new pipeline.
Wall height:	20.5m
Storage capacity (before excavation):	4.69 million m^3
Maximum water depth (before excavation):	16.2 m
Hazard rating:	High
Hazard dam type:	Category III Dam
Materials required and not available on site:	Sand, gravel, rocks and concrete aggregates (which all need to be imported).

1.2 Purpose of the Report

The purpose of the scoping phase is to gather information on the proposed site and establish an understanding of the study area and the receiving environment. This phase will also determine how the proposed activities will potentially impact on the environment. The Assessment of alternatives e.g., location, design, technology, etc. will be considered in this report. The report will further identify any Interested and Affected Parties in the study area, engage with such parties and relevant authorities and identify environmental issues and potential impacts. This Scoping report is intended to guide the EIA process and the required specialist studies by:

- Providing an overview of the legal requirements with regards to the proposed balancing dam;
- Providing a project description of the proposed balancing dam as well as the anticipated environmental and social impacts that will be further investigated in the EIA phase;
- Setting the scope for the EIA process as well as the Terms of Reference (ToR) for the proposed specialist studies;
- Outlining the approach and methodologies to be used in the Scoping and EIA phase including the impact assessment methodology.

1.3 Assumptions and Limitations

The following assumptions have been made in the undertaking of the scoping process:

- The application is limited to the proposed Lower Coerney Balancing Dam site;
- The information obtained from the specialist studies undertaken for this project is accurate and objective and sufficient for the level of assessment required;
- The information provided by the applicant is accurate, adequate, and unbiased, and no information that could change the outcome of the EIA process has been withheld;
- Detailed assessment of the positive and negative environmental impacts of the proposed dam will be undertaken during the Environmental Impact Assessment phase;

- In accordance with the Protection of Personal Information Act (Act 4 of 2013), personal information (emails, contact numbers, address) is blanked out and excluded during the Public Participation and only provided to DFFE officials; and
- Personal information of I&APs made available to the competent authority shall only be used by the authorities to confirm or obtain information regarding this specific project.

1.4 Locality Description

The proposed Lower Coerney Balancing Dam site is located on Portion 7 of the Farm Scheepersvlakte No. 98 (C07600000000009800007), Farm 713 Uitenhage (C07600000000071300000) and the Remaining Extent of Farm 40 Farm Enon Mission 574 (C07600000000075800000) owned by Scheepersvlakte Farms CC, Venter Wildlife Trust and the Moravian Church in South Africa respectively. Landowner Consent for Scheepersvlakte Farms CC and Venter Wildlife Trust were easily obtained during the initial public participation, but some issues were encountered regarding the appropriate landowner responsible for the land and the signing of landowner consent for Farm Enon Mission as Farm Enon Mission Trust initially indicated that they are the landowner and did not want to provide landowner consent.

The issue was later resolved though title deed search which indicated that the Moravian Church in South Africa are registered landowners and the landowner consent to permit the undertaking of the EIA process on the portion of the land has subsequently been obtained. The study area is located in the town of Addo near Kirkwood, Sundays River Local Municipality in the Eastern Cape Province. The approximate coordinates of the site are 33°26'29.77"S and 25°37'23.68"E**.** The proposed location of the Coerney Dam is upstream of the Coerney Syphon outlet in a valley east of and adjacent to the existing Scheepersvlakte Dam as indicated in **Figure 1**.

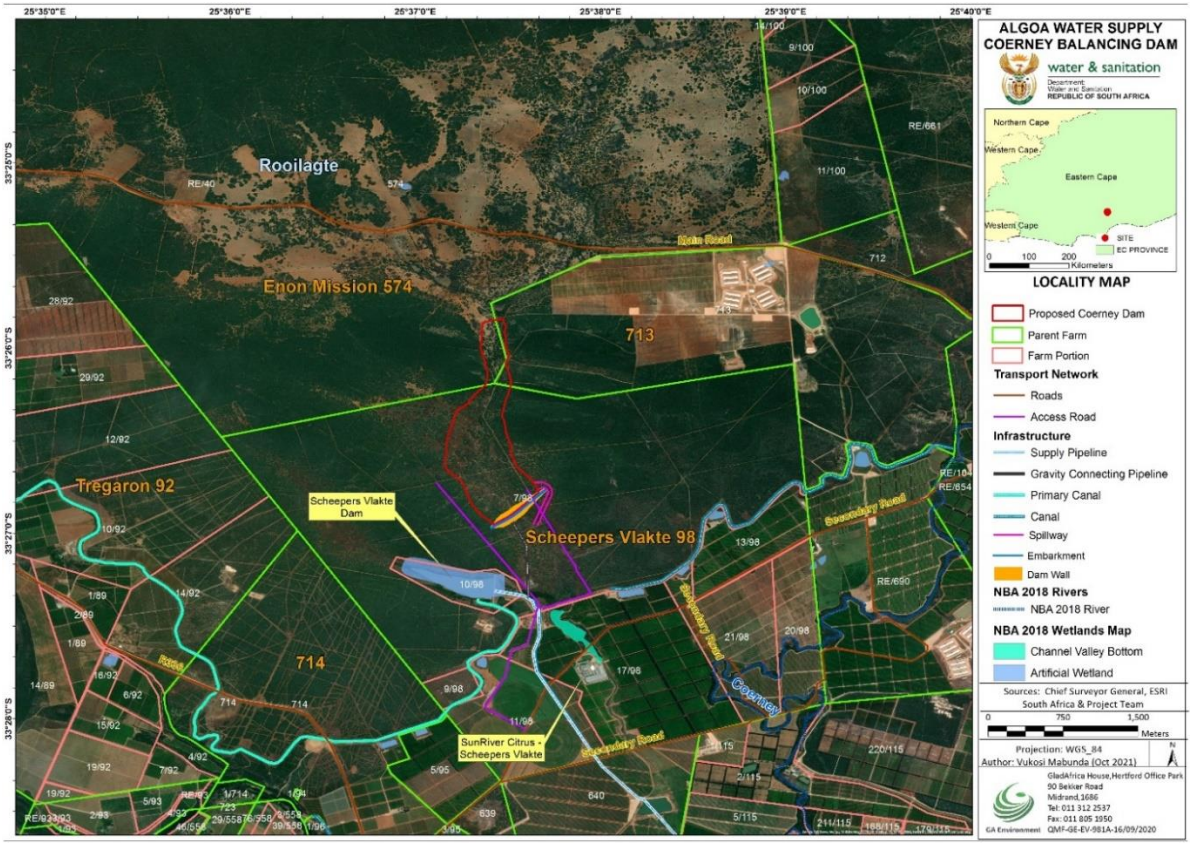


Figure 1: Locality Map of the Proposed Lower Coerney Balancing Dam

The site can be accessed from a gravel road that connects to the R336 approximately 4 km southwest of the site. There are currently no formal roads within the Scheepersvlakte farm. The footprint of the proposed Coerney Dam is approximately 77.1 hectares and a portion of this footprint overlaps with portions of the planned future development on Scheepersvlakte Farms. The area of proposed future citrus orchards which may be impacted by the proposed dam is approximately 36ha. Refer to **Figure1 1** for the locality map of the proposed dam.

1.5 Surrounding Land-Uses

The proposed Lower Coerney Balancing Dam is located within the Scheepersvlakte Citrus Farm Region close to the town of Kirkwood. The adjacent land uses are citrus farms and several waterbodies that support the farming community. The region is the biggest citrus producer and exporter, based in the Sundays River Valley, South Africa with farms in Kirkwood, Sunland and Addo. Sundays River has grown from humble beginnings into one of South Africa's leading citrus growers and exporters. The Scheepersvlakte Citrus Farm development project near Kirkwood in the Eastern Cape was highlighted by President Cyril Ramaphosa during the recent Sustainable Infrastructure Development Symposium South Africa. It was described as a "greenfield" investment project to grow over 500ha of citrus, with a proposed investment value of R122 million over five years (https://www.pressreader.com/foryou).

1.6 Motivation for the need of the project

The existing Scheepersvlakte Balancing Dam is a balancing facility for water supply to the Lower Sundays River Water User Association (LSRWUA) and the Nelson Mandela Bay Municipality (NMBM), and for emergency supply. The Lower Coerney Balancing Dam Project was declared by the previous Department of Water and Sanitation Minister, Ms. Lindiwe Sisulu as an Emergency Works Project in 2020, prioritizing its development as a high and urgent priority. The existing Scheepersvlakte Balancing Dam has been identified by NMBM officials and the DWS as a growing, high, operational risk to the bulk water supply of the NMBM system, with part of the supply area even running dry from time to time. The Scheepersvlakte Balancing Dam had an initial storage capacity of 820 000 m^3, but this has been reduced through siltation and is further constrained by operational limitations and problems. Additional future balancing capacity should be provided to supply 210 Mℓ /day for 21 days (4.1 million m^3) to NMBM.

i. Addressing the limited balancing capacity

There is currently unreliability of supply from the Scheepersvlakte Balancing Dam to supply water to the Nooitgedagt WTW. The Scheepersvlakte Balancing Dam was designed and sized to balance irrigation supplies into the Lower Coerney canal only. The key factors which determine the reliability of supply to Nooitgedagt WTW are as follows:

- There is limited balancing capacity in Scheepersvlakte Dam, which is operated at a capacity of 550 000 m^3 to avoid spillages, although the dam has a total capacity of 820 000 m^3; and
- There is a risk of failure of the aging upstream canal, syphon and weir infrastructure, such as the May 2017 failure of the main canal.

According to the information taken from the prefeasibility studies, irrigation water releases from the Scheepersvlakte Balancing Dam into the Coerney Canal receives priority on a Monday morning, whether the dam level at that point in time permits sufficient flow to the Nooitgedagt WTW or not. Limitations on draw-down levels (limited balancing capacity) will limit the peak capacity available to NMBM when the supply source (storage dams) to the west of Port Elizabeth has a breakdown. This limitation of balancing capacity is a high risk to the continuity of bulk water supply to the Nooitgedagt WTW. Therefore, the proposed Lower Coerney Balancing Dam seeks to address the limitation of the balancing capacity.

ii. Reducing Operational Limitations

The LSRWUA controls water releases from Darlington Dam, which is situated some 50 km upstream of the Korhaansdrift Weir. The LSRWUA must be notified in advance by all irrigators as well as the

NMBM on what their water requirements for the following week will be. In the case of the NMBM, operations could change within hours, as a major pipe burst on bulk supplies from the western sources could happen over weekends or as a worst-case scenario, on a Monday when the Scheepersvlakte Balancing Dam is down to a minimum level. This will require the Nooitgedagt WTW to increase output over a period of days, which then upsets the operation at the LSRWUA and impacts on the balance of water available for irrigators.

The Scheepersvlakte Balancing Dam, being an irrigation balancing dam, has a bottom outlet (intake to gravity pipeline). This bottom intake and bottom orientation of the offtakes to the gravity pipeline (emergency scheme modifications) result in sediment and debris from the dam being drawn into the Nooitgedagt pipeline. This is worsened when the dam levels are low and at times when draining of the dam is required. Fish and trash are then drawn into the gravity supply to the WTW. The outlet works, that conveys dam water to the Coerney Lower Canal and the Nooitgedagt pipeline, is prone to mechanical failures, which generally require a 3-day complete shut-down to remove or re-install a faulty valve. This operational problem transfers major risks onto the NMBM water supply system. The risk will be effectively eliminated through the development of the Coerney Dam, which can provide up to 21 days of water supply during the maintenance and operational works of the existing Scheepersvlakte Balancing Dam.

iii. Ageing Infrastructure

During winter dry periods, water supply is operated on the basis of three days on and two days off. This requires a major effort by the LSRWUA to ensure that Scheepersvlakte Balancing Dam, with such a small balancing capacity, is operated with sufficient water in storage to meet NMBM's water requirements. The current manner of accommodating the dry period maintenance programme appears to work well for the present. The infrastructure is, however ageing, and it is doubtful whether the same methodology will remain applicable to maintain the canal system for another 25 to 30 years. The limited balancing capacity will then become a more serious risk to the NMBM. The status of supply from the Scheepersvlakte Balancing Dam therefore poses a high risk for reliability of water supply to the NMBM. New infrastructure is required to cope with the methods undertaken to ensure water supply during the winter dry season.

1.7 Triggered activities in terms of NEMA

In terms of section 24(2) of NEMA, the Minister and/or any MEC in concurrence with the Minister may identify activities that require authorisation as these activities may negatively affect the environment. Environmental Impact Assessment (EIA) Regulations were promulgated in 2017 and amended in 2021

in terms of Section 24(5) and Section 44 of the National Environmental Management Act (NEMA), Act 107 of 1998 and consist of the following:

- *Regulation 982* provides details on the processes and procedures to be followed when undertaking an Environmental Authorisation process;
- *Listing Notice 1* (Regulation 983) defines activities that will trigger the need for a Basic Assessment process;
- *Listing Notice 2* (Regulation 984) defines activities that trigger an Environmental Impact Assessment (EIA) process. If activities from both R 983 and R 984 are triggered, then an EIA process will be required; and
- *Listing Notice 3* (Regulations 985) defines certain additional listed activities for which a Basic Assessment process would be required within identified geographical areas.

The above regulations were assessed to determine whether the proposed project will trigger any of the above listed activities, and if so, which Environmental Authorisation Process would be required. The triggered listed activities presented in **Table 3** will require authorisation in terms of GNR 983 Listing Notice 1, GNR 984 Listing Notice 2 and GNR 985 Listing Notice 3 of the NEMA EIA Regulations 2017 and 2021 as amended. A Scoping and EIA process is required in line with all the requirements of the NEMA EIA Regulations, 2014, as amended.

Table 3: Listed Activities in terms of NEMA EIA Regulations, 2017 and 2021 as amended

Activity No	Activity in writing as per Listing Notices 1,2 & 3 (GN No 983, 984 & 985)	Applicability
	GN No 983 Listing Notice 1	
Activity 9	The development of infrastructure exceeding 1,000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0.36 metres or more; or (ii) with a peak throughput of 120 litres per second or more	A new pipeline is proposed from the existing Kirkwood Primary Canal to the new dam, including the inlet works at the dam. The gravity main will comprise a 2 500m long, 600 mm diameter steel or ductile iron pipeline.
Activity 12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse	The proposed dam basin, dam wall and proposed 600 mm rising main will be within the watercourse and will exceed 100 m^2. Both are located within a rural area.
Activity 19	The infilling or depositing of any material of more than 10 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10m^3 from – (i) A watercourse.	The proposed dam basin, dam wall and inlet/outlet structures will result in the deposition or removal of 10 m^3 or more of material from and in a watercourse**.**
Activity 30	Any process or activity identified in terms of Section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).	Indigenous vegetation will need to be cleared (i.e., permanent removal) in a Critical Biodiversity Area to accommodate the construction of the dam.
Activity 56	The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres.	There are currently no formal access roads on site. Internal roads will need to be constructed to support the development.
Activity 63	The expansion of facilities or infrastructure for the transfer of water from and to or between any combination of the following— (i) water catchments; (ii) water treatment works; or (iii) impoundments;	The proposed dam will include water transfer from the existing canal to the Lower Coerney Balancing Dam and from there to the Nooitgedacht WTW.

Activity No	Activity in writing as per Listing Notices 1,2 & 3 (GN No 983, 984 & 985)	Applicability
	where the capacity will be increased by 50 000 cubic metres or more per day, but excluding water treatment works where water is treated for drinking purposes.	
	GN No 984 Listing Notice 2	
Activity 11	The development of facilities or infrastructure for the transfer of 50,000 cubic metres or more water per day, from and to or between any combination of the following:— (i) water catchments; (ii) water treatment works; or (iii) impoundments. Excluding treatment works where water is to be treated for drinking purposes,	Inlet and outlet pipelines will be constructed to transfer water daily from the Kirkwood primary canal into the dam and from the dam to the WTW.
Activity 15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or maintenance purposes undertaken in accordance with a maintenance management plan.	The proposed dam basin, dam wall and inlet/outlet structures will result in the clearance of more than 20 hectares of indigenous vegetation. The dam basin is expected to cover an area of 77 hectares.
Activity 16	The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall is 5 metres or higher, or where the high-water mark of the dam covers an area of 10 hectares or more.	The proposed dam wall will have a height of 20.5m.
	GN No 985 Listing Notice 3	
Activity 4	The development of a road wider than 4 metres with a reserve less than 13.5 metres. **a. Eastern Cape** Outside urban areas: (cc) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	There are currently no formal access roads leading to the site where the dam is proposed. It is anticipated that current access roads may need to be upgraded to improve access to the proposed dam.
Activity 12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. a. **Eastern Cape** i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans.	Species of Conservation Concern (SCC) will need to be cleared (i.e.; permanent removal) in a Critical Biodiversity Area to accommodate the proposed dam.
Activity 14	The development of (i) dams or weirs, where the dam or weir, including	The proposed dam and the associated infrastructure will have a physical footprint greater than 10 square

Activity No	Activity in writing as per Listing Notices 1,2 & 3 (GN No 983, 984 & 985)	Applicability
	infrastructure and water surface area exceeding 10 square metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs (a) within a watercourse; (c) if no development setback has been adopted, within 32 meters of a watercourse. **a. Eastern Cape** i. Outside urban areas: (dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	meters and will be undertaken within 32 m of a drainage line which is regarded as a watercourse.
Activity 18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. **a. Eastern Cape** i. Outside urban areas: (aa) A protected area identified in terms of NEMPAA, excluding conservancies; (bb) National Protected Area Expansion Strategy Focus areas; (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (ii) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined; or (kk) A watercourse	There are currently no formal access roads leading to the site where the dam is proposed. It is anticipated that current access roads may need to be upgraded to improve access to the proposed dam.
Activity 23	The expansion of (i) dams or weirs where the dam or weir is expanded by 10 square metres or more; or (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs— (a) within a watercourse; (b) in front of a development setback adopted in the prescribed manner; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; **a. Eastern Cape** i. Outside urban areas:	It is anticipated that existing canal and its associated infrastructure will be expanded by more than 10 square meters and will be undertaken within 32 m of a drainage line which is regarded as a watercourse.

Activity No	Activity in writing as per Listing Notices 1,2 & 3 (GN No 983, 984 & 985)	Applicability
	(cc) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	

In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed, and reported to DFFE as the competent authority (the decision-maker).

This scoping report was conducted in accordance with Section 21- 24 and Appendix 2 of the NEMA EIA regulations, 2014, as amended. NEMA requires that an EIA be undertaken to inform the authorisation process for the listed activities. The NEMA EIA regulations, 2014, as amended (Government Notice R. 982), published in terms of Sections 24(5) and 44 of NEMA, defines the manner in which the EIA is to be undertaken. Guideline documents have been published by the DFFE and these provide further guidance in implementing the EIA Regulations. The guideline documents will be used as reference documents for the purpose of this EIA.

1.8 Scoping and EIA Requirements

The list of activities applied for in terms of the NEMA EIA Regulations has already been discussed in **Chapter 1.7.** These listed activities triggered by the proposed development of Lower Coerney Balancing Dam must follow the required Environmental Impact Assessment process as required by the NEMA EIA Regulations, as amended, as set out in Government Notice Regulations 982 in Government Gazette No. 40772 of 7 April 2017. Based on these Regulations, a Scoping and EIA process must be followed. The Application Form will be submitted to the DFFE as the relevant Competent Authority as per the 2014 NEMA Regulations application procedures.

1.9 The Scoping Phase

The Scoping and EIA process must be undertaken in accordance with the 2014 EIA Regulations No. 982, as amended. The main objectives of the current Scoping Phase, in terms of the regulatory requirements stipulated in *Appendix 2* of the 2014 EIA Regulations, are to:

a) identify the relevant policies and legislation relevant to the activity;
b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;
d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
e) identify the key issues to be addressed in the assessment phase;

f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and

g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

1.10 The Scoping Report

Once the Draft scoping process is complete, a Final Scoping Report must be prepared detailing the scope of the EIA required for the proposed activities. This Scoping Report has been compiled in accordance with the requirements set out in Appendix 2 of the 2014 EIA Regulations, as amended, which outlines the contents of a Scoping Report and provides the requirements necessary for undertaking the Public Participation Process.

1.11 Structure of the Scoping Report

This Scoping Report is divided into **10 Chapters**, the contents of which will be presented as follows in this report:

- **Chapter 1** introduces the background to the development proposal and profiles its proponents. Furthermore, this chapter provides an indication of the EIA process that will be followed as well as providing insights into the legislative requirements that have resulted in the need for this process;
- **Chapter 2** provides the legislative framework for the EIA process and the context of the proposed development. The legislative framework includes national and provincial legislation as well as a planning framework that will have to be considered in the EIA process, such as the SDF and IDP;
- **Chapter 3** is a detailed project description and proposed infrastructure;
- **Chapter 4** is a detailed description of the adopted Scoping and Environmental Impact methodologies that will be implemented throughout the project;
- **Chapter 5** is a description of the receiving environment associated with the proposed development;
- **Chapter 6** is a description and comparative assessment of the alternatives that were considered;

- **Chapter 7** details the various steps and processes that were followed in the Public Participation Process. It also summarises key outcomes of the process;
- **Chapter 8** details the issues and potential issues identified for the proposed development;
- **Chapter 9** provides a plan of study for the Environmental Impact Assessment; and
- **Chapter 10** provides a conclusion to the report as well as recommendations.

1.12 Application Details

This section of the Scoping Report provides the particulars, including contact details, of the key stakeholders (Applicant's representative, Environmental Assessment Practitioner and the relevant, Competent Authority Official associated with the project. These details are outlined in **Table 3** below.

Table 4: Application details

Applicant's representative	Environmental Impact Practitioner	Competent Authority Representative
Name: Dayton Tagwi **Designation**: Project Manager **Tel:** Available on request (POPI Act) **e-Mail:** Available on request (POPI Act)	**Name:** Vukosi Mabunda **Designation**: Environmental Impact Assessment Practitioner **Address:** GladAfrica House, Hertford Office Park, 90 Bekker Road, Midrand, 1686 **Tel:** 011 312 2537 **Fax:** 011 805 1950 **Email:** vukosim@gaenvironment.com/ environment@gaenvironment.com	**TBC**

This Scoping Report was prepared by **Vukosi Mabunda,** a Registered Environmental Assessment Practitioner (EAP) employed by GA Environment. His CV is included in **Appendix C** of this report. Mr. Vukosi Mabunda is a current Geographic Information Systems (GIS) Specialist and Environmental Assessment Practitioner with 4 years of working experience. Vukosi is a Registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA). He is one of the few dual registered professionals with SACNASP as a Professional Geospatial Scientist and Professional Environmental Scientist. Vukosi has a dual professional background in Geographic and Environmental Sciences with a Master of Science Degree in Geography.

2 LEGISLATIVE FRAMEWORK

This section of the Scoping Report discusses applicable legal provisions and the legal context for the Environmental Impact Assessment process required for the proposed Lower Coerney Balancing Dam. It provides a review of relevant legislation, regulations, policies and guidelines, which apply to or have implications, for the proposed project.

The contents of this report are based on a review of the information that was available at the time of the compilation of the report. The discussion in this chapter is by no means an exhaustive list of the legal obligations of the applicant in respect of environmental management for the proposed dam.

2.1 Legislation Review

2.1.1 Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)

The environmental right is mentioned in Section 24 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996). This states the following:

"...everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".

The State must therefore respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities. The Constitution therefore recognises that the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must cooperate with, consult and support one another if the State is to fulfil its constitutional mandate.

The application for Environmental Authorisation for the proposed Lower Coerney Balancing Dam will ensure that the environmental right enshrined in the Constitution contributes to the protection of the biophysical and social environment.

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

In order to bring section 24 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) into realisation, the National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998) was promulgated to serve to *'provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised*

by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith'. NEMA is the main Environmental Legislation in South Africa and other Specific Environmental Management Acts (SEMA's) support its objectives. Examples of SEMA's include the following:

- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008);
- National Water Act, 1998 (Act No. 36 of 1998);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999);
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004); and
- National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

Some specific Environmental Management Legislation is discussed in **Chapters 2.1.3 to 2.1.8.** The key principles of NEMA as outlined in Section 2 can be summarised as follows:

- sustainability must be pursued in all developments to ensure that biophysical and socio-economic aspects are protected or;
- there must be equal access to environmental resources, services and benefits for all citizens including the disadvantaged and the vulnerable. Adverse environmental impacts shall be distributed fairly among all citizens;
- environmental governance must include the participation of all interested and affected parties who must be catered for to allow their effective participation;
- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably; and
- The polluter pays principle must be applied in all cases where any person has caused pollution or undertaken any action that led to the degradation of the environment.

2.1.3 National Environment Management Act, 1998 (Amendments)

The National Environmental Management Act (Act No. 107 of 1998) has been amended numerous times to better meet its overall objective of the protection of the environment.

The amendments to NEMA include but are not limited to:

- National Environmental Management Act (Act No. 56 of 2002);
- National Environmental Management Act (Act No. 8 of 2004); and
- National Environmental Management Act (Act No. 46 of 2003);

2.1.4 NEMA Environmental Impact Assessment Regulations

In terms of section 24(2) of NEMA, the Minister and or any MEC in concurrence with the Minister may identify activities that require authorisation as these activities may negatively affect the environment. The Act requires that in such cases the impacts must be considered, investigated and assessed before their implementation, and reported to the organ of state charged by law with authorising, permitting, or otherwise allowing the implementation of an activity. The NEMA EIA Regulations guide the processes required for the assessment of impacts of Listed Activities.

The requirement for the undertaking of Environmental Impact Assessments and Basic Assessments began in 1997 with the promulgation of the EIA Regulations under the Environment Conservation Act, 1989 (ECA) (Act No. 73 of 1989). These were followed by the 2006, 2010 and 2014 regulations. **Table 5** is a summary of the progression of the EIA regulations to date.

Table 5: Summary of the South African EIA regulations from inception to date

EIA Regulations	Government Gazette
EIA Regulations promulgated in terms of the ECA, Act No 73 of 1989	GNR 1182 & 1183: Government Gazette No 18261, 5 September 1997
Amendment of the ECA EIA Regulations	GNR 670 and GNR 672 of 10 May 2002, Government Gazette No 23401
2006 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998	GNR 385, 386 and 387 Government Gazette No 28753, Pretoria, 21 April 2006
2010 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998	GNR 543, 544, 545 and 546 Government Gazette No 33306, Pretoria, 18 June 2010
2014 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998	GNR 982, 983, 984 and 985 Government Gazette No 38282, Pretoria, 04 December 2014
Current Amendment of the 2014 EIA Regulations promulgated in terms of the NEMA, Act No 107 of 1998	GNR 982, 983, 984 and 985 Government Gazette No 40772, Pretoria, 07 April 2017

The Environmental Impact Assessment (EIA) for the proposed Lower Coerney Balancing Dam is undertaken in terms of the NEMA EIA Regulations, 2014, as amended. These came into effect on the 07th of April 2017.

2.1.5 National Water Act, 1998 (Act No. 36 of 1998)

The National Water Act, 1998 (Act No. 36 of 1998) aims to provide for management of the national water resources to achieve sustainable use of water for the benefit of all water users. This act requires that the quality of water resources is protected, used, developed, conserved, managed and controlled with the delegation of powers to institutions at the regional or catchment level. The purpose of the

Act is to ensure that the nation's water resources are protected, used, developed, conserved and managed in ways that take into account:

- Meeting basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest; facilitation social and economic development;
- Providing for the growing demand for water use;
- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations;
- Promoting dam safety; and
- Managing floods and drought.

In pursuit of these objectives, Chapter 4 of the act regulates water use, while Section 21 lists eleven water use types that are regulated [Section 21 (a) – (k)]. Watercourses and wetlands are protected in terms of this section, as both are regarded as water resources. Any person wishing to exercise a water use other than those defined in Schedule 1 of the National Water Act, or an existing lawful use, or a use promulgated by a General Authorisation, requires a water use licence. The activities described below are water uses defined in terms of section 21 of the National Water Act and needs authorisation, which includes licensing. The triggered Section 21 activities are;

(b) storing of water;

(c) impeding or diverting the flow in a watercourse;

(d) engaging in a stream flow reduction activity; and

(i) altering the bed, banks, course or characteristics of a watercourse.

A pre-application meeting was held with various units of the Licencing Authority of the Gqeberha Office of the Department of Water and Sanitation on the 15th of December 2021. During the meeting, the abovementioned Section 21 activities were confirmed. A Water Use Authorisation application will be undertaken for the proposed development. The Draft Scoping Report will be submitted to the Department of Water and Sanitation for review and comment.

2.1.6 The Water Services Act 108 of 1997

The Water Services Act (Act 108 of 1997) intends to:

- to provide for the rights of access to basic water supply and basic sanitation;
- to provide for the setting of national standards and norms, and standards for tariffs;
- to provide for water services development plans;
- to provide a regulatory framework for water services institutions and water services intermediaries;
- to provide for the establishment and disestablishment of water boards and water services committees and their powers and duties;
- to provide for the monitoring of water services and intervention by the Minister or by the relevant Province;
- to provide financial assistance to water services institutions;
- to provide for certain general powers of the Minister;
- to provide for the gathering of information in a national information system and the distribution of that information;
- to repeal certain laws; and
- to provide for matters connected therewith.

The Department of Water and Sanitation is complying with this act as they intend to develop the Lower Coerney Balancing Dam to provide water for irrigation to the farmers and provide a 21-day emergency supply of water to the NMBM.

2.1.7 National Heritage Resources Act, 1999 (Act No. 25 of 1999)

The objective of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) is to introduce an integrated system for the management of national heritage resources. The identification, evaluation and assessment of any cultural heritage site, artefact or find in South Africa is required by this Act.

Section 38(1) of this Act states that: *"...any person who intends to undertake a development categorised as...any development or other activity which will change the character of a site-*

(i) exceeding 5 000 m^2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions which have been consolidated within the past 5 years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(v) The rezoning of a site exceeding 10 000m^2 in extent; or

(vi) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development".

Section 38(3) further states that the responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a). The Act stipulates that cultural heritage resources may not be disturbed without authorisation from the relevant heritage authority. Section 34(1) of the Act states that "no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority…"

Section 35 of the Act pertains to the protection of archaeological and palaeontological sites or material as well as meteorites. Section 35(4)(1)(a) states that

'No person may, without a permit issued by the responsible heritage resources authority—

(a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite.

According to the national web-based environmental screening tool (DFFE Screening Tool Report) promulgated into law on the 4th of October 2019 under NEMA EIA Regulations, 2014 as amended, the proposed development is located within an area of low relative archaeological and cultural heritage theme sensitivity. However, a Heritage Impact Assessment (Compliance Statement at the minimum) must be undertaken to cater for Section 38(1) of this Act.

2.1.8 National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

The purpose of this Act is to provide for the:

- Management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act,1998;
- The protection of species and ecosystems that warrant national protection;
- The sustainable use of indigenous biological resources;
- The fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; and

- The establishment and functions of a South African National Biodiversity Institute.

Chapter 7 of the NEMBA regulations govern the 'PERMIT SYSTEM FOR LISTED THREATENED OR PROTECTED SPECIES'. In order to remove or relocate any Threatened species or Protected species identified on the site, the relevant permits must be applied for. According to the Eastern Cape Biodiversity Conservation Plan (ECBCP), the proposed site falls within a Critical Biodiversity Area. The proposed dam will involve the removal of vegetation as well as trees. Therefore, the impacts on the biodiversity of the project will be assessed.

2.1.9 National Forests Act, 1998 (Act No 84 of 1998)

The purpose of the Act is to promote the sustainable management and development of forests and to provide protection for certain forests and trees in terms of:

- Section 15 (1) of the National Forest Act (Act 84 of 1998), any person wishing to cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree must apply for a license from the Minister or any delegated institution or authority; and
- Government Notice 38215, Notice of the List of Protected Tree Species under the National Forests Act, 1998 (Act No 84 of 1998) was gazetted in November 2014.

The proposed project will require the removal of trees, an Ecological assessment will be required to determine if any protected tree species will potentially be affected by the proposed dam. Should the proposed project require the removal of any protected tree species, then the application will have to be lodged with DFFE.

2.1.10 National Environmental Management; Waste Act, No 59 of 2008

The National Environmental Management: Waste Act, no 59 of 2008 came into effect on the 1st of July 2009. The Waste Act places a general duty on a holder of waste to avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated; reduce, re-use, recycle and recover waste; where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner; manage the waste in such a manner that it does not endanger the health or the environment or cause a nuisance through noise, odour or visual impacts; prevent any employee or any person under his or her supervision from contravening the Act; and prevent the waste from being used for an unauthorised purpose. All waste that will be generated during the construction phase of the development must be managed in accordance with this Act.

2.1.11 National Environmental Management Air Quality Act (Act 39 of 2004)

The purpose of the act is to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto. Construction/building waste generated during the construction phase will be managed in accordance with this Act.

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

The construction of the dam and specifically the dam wall and embankments will require a significant quantity of material. DWS has indicated that the material will either be from the excavations of from commercial sources and there will be no need for borrow material. Should the material excavated for the dam basin prove to be unsuitable, material will have to be sourced elsewhere either from a commercial source or from a project-specific borrow pit/quarry. In the case of the latter, the applicant (currently considered to be DWS) will have to apply for a mining permit or license which is subject to an EIA under Listing Notice 1 or 2 of the 2014 EIA Regulations. The aforementioned EIA cannot be done as part of an integrated EIA process, and the EA application and permit/license application have to be submitted to the regional Department of Mineral Resources (DMR) offices (in this instance in Gqeberha). The need for a mining permit/license and associated EIA should be re-evaluated once geotechnical investigations have been completed and the suitability of *in situ* material for construction has been determined and/or commercial sources for material have been identified.

2.2 Department of Forestry, Fisheries and the Environment Screening Tool

On the 5th of July 2019, The Department of Forestry, Fisheries and the Environment issued a Notice of the requirement to submit a report generated by the National Web-based Environmental Screening Tool in terms of section 24(5)(h) of the NEMA, 1998 (Act No 107 of 1998) and regulation 16(1)(b)(v) of the EIA regulations, 2014, as amended. The submission of this report is compulsory when applying for environmental authorisation in terms of Regulation 19 and Regulation 21 of the Environmental Impact Assessment Regulations, 2014 effective from the 4th of October 2019. The DFFE Screening Tool Report was generated on the 9th of November 2021. The Screening report is provided in **Appendix E** of this report. The main findings to be discussed from the screening report are listed below.

i. Proposed Development Area Sensitivity

The following summary of the study area's environmental sensitivities were identified in the Environmental Screening Report. The environmental sensitivities for the proposed development footprint are indicated on **Table 6**.

Table 6: Environmental Sensitivity of Project Area

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme		X		
Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme			X	
Defence Theme				X
Palaeontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

Based on the environmental sensitivities of the proposed project area summarised in **Table 6**, the following list of specialist assessments were identified by the Environmental Screening Report. **Table 7** provides the Specialist studies identified in the Screening report. A motivation by the EAP has been provided where a study is not recommended.

Table 7: Specialist Assessments Identified

No	Specialist Assessment	EAP Motivation
1	Agricultural Impact Assessment	The proposed dam is approximately 77 ha and is located within the largest Citrus production in the South Africa. It is anticipated that a large agricultural field area will be lost due to the dam. However, apart from acting as an emergency supply during low water supply, the dam will in fact supply water to the farms to ensure ongoing production. In addition, there is a shortage of water supply to the farming community at large and the dam will provide additional water supply. Nevertheless, an Agricultural Impact Assessment is recommended and will be undertaken.
2	Landscape/Visual Impact Assessment	This is not recommended as the proposed development and its locality does not trigger the need for this specialist study based on the triggers as identified by Oberholzer (2005). The development will not be a possible visual intrusion as it will blend in with existing land uses which includes the existing dams and surrounding citrus farm and will not change the fabric or character of its vicinity.
3	Archaeological and Cultural Heritage Impact Assessment	Although the site is located within a low Archaeological and Cultural Heritage Sensitivity theme, a compliance statement is recommended to ensure no potential heritage features are impacted upon given the large footprint of the development as well as to ensure that Section 38(1) of the NHRA is catered for. An Archaeological and Cultural Heritage Impact Assessment has been initiated and will be assessed and discussed in the EIA Phase.

4	Palaeontology Impact Assessment	A Palaeontology Impact Assessment is required as the development area is located within an area of Very High paleontological sensitivity. A Palaeontology Impact Assessment has been initiated and will be assessed and discussed in the EIA Phase.
5	Terrestrial Biodiversity Impact Assessment	A Terrestrial Biodiversity Impact Assessment is required as the development area is located within an area of high ecological sensitivity. A Terrestrial Biodiversity Impact Assessment has been initiated and will be assessed and discussed in the EIA Phase
6	Aquatic Biodiversity Impact Assessment	Although the site is located within an area of low aquatic sensitivity, an Aquatic Biodiversity Impact Assessment is recommended due to the nature of the development as well as to support the Water Use Authorisation Application. An Aquatic Biodiversity Impact Assessment has been initiated and will be assessed and discussed in the EIA Phase
7	Noise Impact Assessment	The proposed access (gravel) roads will tie into existing surfaced roads south of the study area. Most of the noise is anticipated during the construction phase, however given the surroundings of the area, the trees and vegetation (natural noise barriers) will absorb any noise produced. In addition, there are no residential areas surrounding the site. As such, the EAP suggested that a Noise Impact Assessment will not be required.
8	Geotechnical Assessment	Geotechnical investigations are necessary for a development of this nature to ensure sustainability and safety issues are catered for during the design. Geotechnical investigations for the site were undertaken in September 2019.
9	Socio-Economic Assessment	In terms of land use change, it is not anticipated that the proposed dam will lead to a drastic land use change as the proposed activities will blend with the existing activities within the larger area. The proposed dam will in fact support the surrounding farming communities. There is a likelihood of temporary employment during the construction phase of the project and permanent employment opportunities during the operational phase. It is the opinion of the EAP that a Socio-Economic Assessment is not deemed necessary for development.
10	Seismicity Assessment	This study was covered by the Geotechnical investigations undertaken for the site in September 2019.
11	Plant Species Assessment	This study will be covered by the Terrestrial Biodiversity impact assessment which is assessed and discussed in the EIA Phase.
12	Animal Species Assessment	This study will be covered by the Terrestrial Biodiversity impact assessment which is be assessed and discussed in the EIA Phase.

2.3 Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013)

The Spatial Planning and Land Use Management Act, No.16 of 2013, has been in effect since July 2015. Essentially SPLUMA applies to the governance of how land is used, which is significant for developers who are applying for land developments. The objectives of the act are to:

- provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;

- ensure that the system of spatial planning and land use management promotes social and economic inclusion;
- provide for development principles and norms and standards;
- provide for the sustainable and efficient use of land;
- provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and
- redress the imbalances of the past and ensure that there is equity in the application of spatial development planning and land use management systems.

The proposed site falls within an "Agricultural" zone and the main function will be to provide water supply for agricultural activities and an emergency water supply to the Nelson Mandela Bay Metropolitan Municipality. Therefore, the development is located within an appropriate land use zone.

2.4 Expropriation Act 63 of 1975

The Expropriation Act 63 of 1975 intends to provide for the expropriation of land and other property for public and certain other purposes. Expropriation means the compulsory acquisition of land from a private person (individuals and juristic persons) by the state for constitutionally circumscribed purposes. Under section 25 of the Constitution, an expropriation is legally justified if it serves a public purpose or a public interest. Although neither term is defined in the Constitution, courts have defined public purposes as "government-related purposes" like the building of schools or hospitals or providing basic services like water.

Public interest is much broader but includes the need for land reform. The decision to expropriate must be taken by the state and the ownership of land, initially vests with the state, after which it may be transferred to another private individual or held by the state in perpetuity. The proposed Lower Coerney Balancing Dam site is located on Portion 7 of the Farm Scheepersvlakte No. 98 (C07600000000009800007), Farm 713 Uitenhage (C07600000000071300000) and the remaining extent of Farm 40 Farm Enon Mission 574 (C07600000000075800000) owned by Scheepersvlakte Farms CC, Venter Wildlife Trust and the Moravian Church in South Africa respectively. Landowner Consent for Scheepersvlakte Farms CC and Venter Wildlife Trust were easily obtained during the initial public participation, but there were initially issues regarding the correct landowner and signing of landowner consent for Farm Enon Mission as Farm Enon Mission Trust initially indicated that they are the landowner and do not want to provide landowner consent. The issue was later resolved though title deed search which indicated that the Moravian Church in South Africa are registered landowners

and subsequently landowner consent was obtained. Alternatively, should there be issues with the landowner refusing to give off the land for the development of the dam in line with the land acquisition and applicable compensation process, the Developer (DWS) would have to exercise the expropriation of land. DWS will formally engage and negotiate will all affected landowners before considering the land expropriation process.

2.5 Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)

This Act provides for the protection of agricultural land in rural areas, i.e., land that is not situated in urban areas (except for provisions for the control of weeds that do apply to land in urban areas). The Act shall not apply to mountain catchment areas. The objective of this Act is to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by combating and prevention of erosion and weakening or destruction of the water sources, and by protection of the vegetation and the combating of weeds and invader plants.

The Act prohibits the spreading of weeds and empowers the Minister to prescribe control measures which shall be complied with by land users to whom they apply. Such control measures may relate to: (a) the cultivation of virgin soil; (b) the utilization and protection of land which is cultivated; (c) the irrigation of land; (d) the prevention or control of waterlogging or salination of land; (e) the utilization and protection of vleis, marshes, water sponges, water courses and water sources; (f) the regulating of the flow pattern of run-off water; (g) the utilization and protection of the vegetation; (h) the grazing capacity of veld, expressed as an area of veld per large stock unit; (i) the maximum number and the kind of animals which may be kept on veld; (j) the prevention and control of veld fires; (k) the utilization and protection of veld which has burned; (l) the control of weeds and invader plants; (m) the restoration or reclamation of eroded land or land which is otherwise disturbed or denuded; (n) the protection of water sources against pollution on account of farming practices; and (o) the construction, maintenance, alteration or removal of soil conservation works or other structures on land.

The executive officer may by means of a direction order a land user to comply with a particular control measure. The Minister may, by notice in the Gazette, establish assistant schemes for purposes of this Act. If necessary for the restoration or reclamation of the natural agricultural resources of any land to achieve the objectives of this Act, the Minister may expropriate land. The Act establishes the Conservation Advisory Board and empowers the Minister to establish (regional) conservation committees. The developer must comply with the conditions of this act. Environmental Management

Plans including an Environmental Management Programme (EMPr), Alien Invasive Species Management Species, Rehabilitation Plan and Soil and Erosion Management Plan will be compiled to effectively manage and guide the development.

2.6 Protection of Personal Information Act, 2013 (Act 4 of 2013

The Protection of Personal Information Act (or POPI Act) sets some conditions for responsible parties (called controllers in other jurisdictions) to lawfully process the personal information of data subjects (both natural and juristic persons). To comply with the requirements of this Act, all personal information (emails, contact numbers, address) are blanked out during the Public Participation process and only provided to DFFE officials who do not require consent to receive such information in the performance of their official duties.

2.7 Promotion of Access to Information Act, 2000 (Act No. 2 of 2000

This Act gives effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights. To comply with the requirements of this Act, all documents relating to the EIA Process will be made available to the public and relevant authorities in the different spheres of Government.

2.8 Draft Eastern Cape Environmental Management Bill (2019)

Its professed objectives are to rationalize, consolidate and reform the law regulating environmental management and to provide for the harmonisation of provincial legislation with national legislation regulating protected areas, biodiversity, waste management and air quality and to provide for matters connected therewith. It is proposed in the draft bill that the following Acts applying in the Eastern Cape are repealed:

- Nature and Environmental Conservation Ordinance, 1974;
- Nature Conservation Act, 1987 (Ciskei);
- Environmental Conservation Decree, 1992 (Transkei); and
- Mountain Catchment Areas Act, 1970.

The developer must ensure that the necessary environmental processes, applications, studies and investigations are undertaken before the construction phase in accordance with the Eastern Cape Environmental Management Bill. The conditions, recommendations and mitigation measures provided in the studies must be implemented as far as possible to ensure the environmental impacts are kept as low as possible.

2.9 Eastern Cape Biodiversity Conservation Plan (2018)

The Eastern Cape Biodiversity Conservation Plan (ECBCP) is the new biodiversity planning product developed for the Eastern Cape Province to mainstream biodiversity into the municipal planning process, in particular the Spatial Development Frameworks (SDFs), in protecting biodiversity and promoting appropriate development. The overall goal of the ECBCP is to facilitate sustainable development in the Eastern Cape, by ensuring that the province's ecosystems continue to deliver vital services for human well-being by:

- Providing information that strengthens land-use planning and streamlines environmental decision-making;
- Enhancing effective conservation and management of biodiversity; and
- Guiding the expansion of the provincial protected area network.

According to the ECBCP, the proposed dam is located within a Critical Biodiversity Areas (CBAs). CBAs are terrestrial and aquatic features in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning. The dam footprint is approximately 77ha and will require clearance of vegetation within a CBA, therefore the developer (DWS) must ensure that all applications, permits and licenses are obtained in line with NEMA, Eastern Cape Environmental Management Bill and ECBCP before any clearance can be undertaken for the development.

3 PROJECT DESCRIPTION

The information provided in this Section is taken from the feasibility reports; *Options Analysis Report: Support of the Water Reconciliation Strategy for the Algoa Water Supply System* by Aurecon (2019) and *the Support of the Water Reconciliation Strategy for the Algoa Water Supply System – Series* by the Department of Water and Sanitation (2019*).*

The objective of the Water Reconciliation Strategy for the Algoa Water Supply System is to:

- limit risks of shortfall in supply to the Nelson Mandela Bay Municipality (NMBM) and the Lower Sundays River Government Water Scheme (LSRGWS);
- remove potential operating system constraints for the sustainable delivery of bulk Orange River water supply to the LSRGWS and NMBM, for water requirements up to 2040; and
- limit operational risks to acceptable levels.

The existing Scheepersvlakte Balancing Dam is a balancing facility that is currently used for water supply to both LSRWUA and NMBM, but has inadequate capacity for emergency supply to NMBM. Feasibility study investigations were undertaken to provide dedicated balancing storage for water supply to the Nooitgedagt water treatment works (WTW), which provides potable water to NMBM. The main purpose of the proposed new balancing dam, at the Lower Coerney site, is to improve operation and provide balancing storage for NMBM. After investigation of a number of potential dam sites, the Lower Coerney site was found to be the most favorable site for the proposed new balancing dam for emergency water supply to NMBM. The feasibility design was undertaken on the Lower Coerney Balancing Dam.

3.1 Overview of the proposed Coerney Balancing Dam Design and Infrastructure

The feasibility-level design of the conveyance infrastructure associated with the proposed balancing dam has concluded the following:

a) The proposed scheme comprises of two gravity pipelines.

b) The main advantages of the proposed scheme are that the proposed Coerney Dam would increase the raw water storage capacity of NMBM and the high point in the existing Nooitgedagt WTW gravity main would be bypassed.

c) The hydraulic calculations of both pipelines are based on a design capacity of 280 mega liters a day (Mℓ/d) or 3.24 cubic meters per second (m^3/s) and Coerney Dam water levels at Minimum Operating Level (MOL) of 86 meters above the mean seal level (masl) and a Full Supply Level (FSL) of 98.2 masl.

d) A storage capacity of only 17% would be required for a Nominal Diameter (DN) 1400 pipeline to deliver the design flow rate of 3.24 m^3/s. A flow of 106.6 Mℓ/d can be discharged through a Diameter Nominal (DN) 1400 pipeline with the dam level at MOL, i.e., almost 40% of the maximum flow rate.
e) Based on the hydraulic gradient lines, it would be possible to discharge 280 Mℓ/d from the Kirkwood Canal to the Coerney Dam.
f) It is proposed that steel pipes be considered as the preferred pipe material for the proposed pipelines.
g) Based on the preliminary wall thickness calculations, the proposed pipelines will be DN 1400, Grade X52 steel with a yield strength of 358 MPa and a recommended wall thickness of 10 mm.
h) The proposed dam will be supplied from the Kirkwood primary canal through a DN 1400 pipeline, which will also be used to transfer water to the tie-in point on the existing Nooitgedagt pipeline.
i) The offtake from the Kirkwood primary canal will be located downstream of the Coerney syphon intake, and upstream of the long weir. It is proposed that the new offtake comprises an adjustable weir that would allow regulating of the flow that could be discharged from the canal to the WTW or the Coerney Dam.
j) A connection will be made into the existing Nooitgedagt WTW supply pipeline downstream of the cross-connection with the Scheepersvlakte syphon, and downstream of the existing high point in the existing supply pipeline.
k) The Middle Addo canal will have to be crossed at two locations using a pipe bridge.
l) The proposed Coerney Dam spillway will need to be crossed by the DN 1400 pipeline, if the spillway is constructed on the right abutment of the dam. There will be no impact on the pipeline if the spillway is constructed on the left abutment.
m) An additional syphon under the Sundays River on the existing Nooitgedagt WTW supply pipeline is proposed. The purpose is to reduce the risk of supply failure and to mitigate the risk of the new balancing storage being located on the opposite side of the river, relative to the WTW.
n) It is proposed that the new syphon be located upstream and separate from the existing syphon. Apart from doubling the syphon it is also recommended that an adequate stockpile of replacement pipes be kept on site, to enable quick repair of the pipeline in case of failure.

3.2 Pipeline Design

The proposed scheme comprises two gravity pipelines, namely a pipeline supplying water from the Kirkwood Primary canal to the proposed Coerney Dam, and a pipeline supplying water from the proposed Coerney Dam to a tie-in point on the existing Nooitgedagt pipeline that feeds the Nooitgedagt WTW. The main advantages of the proposed scheme are that the proposed Coerney Dam

would increase the raw water storage capacity of NMBM. The high point in the existing Nooitgedagt WTW gravity main would be bypassed, to increase the hydraulic capacity during periods with low water levels in the dam. Refer to **Figure 2** for the Schematic layout of the proposed new dam and connecting pipelines.

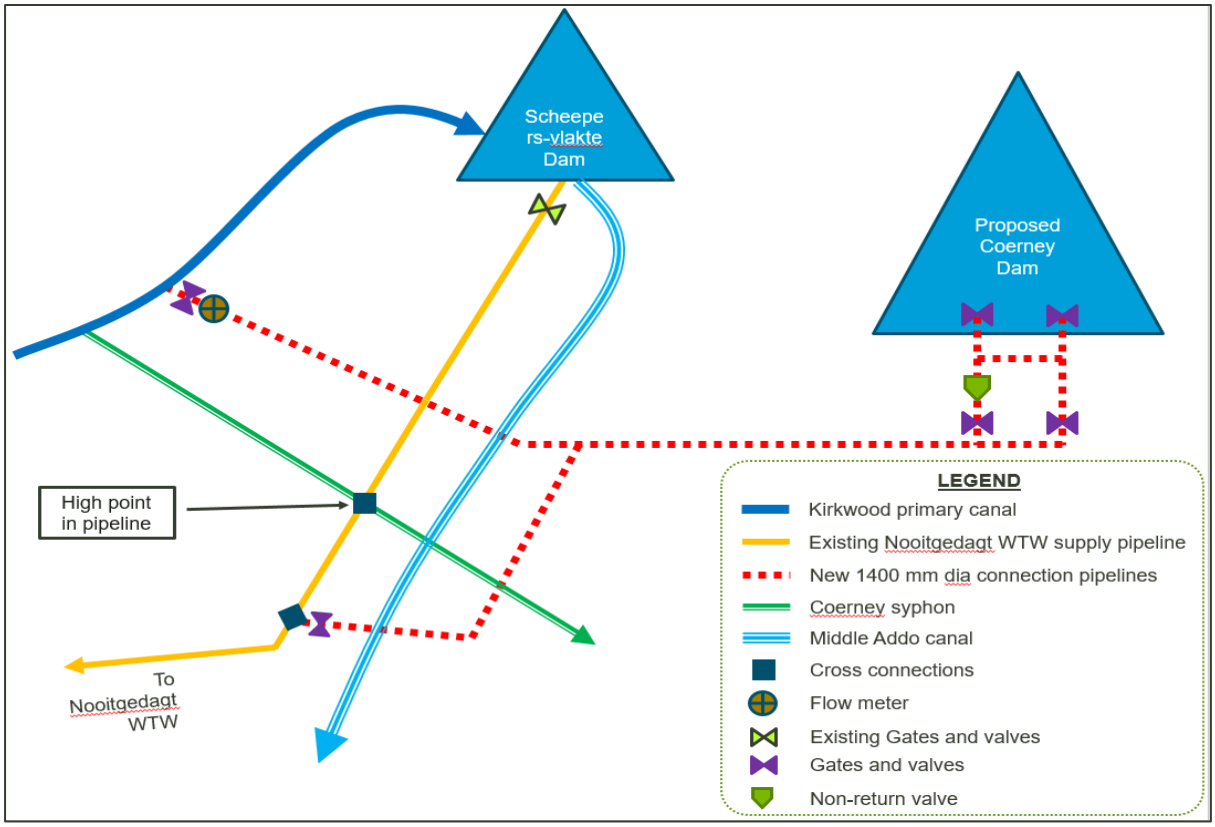


Figure 2: Schematic layout of the proposed new dam and connecting pipelines (DWS, 2020)

The hydraulic calculations of both pipelines are based on a design capacity of 280 Mℓ/d (3.24 m^3/s) and the Coerney Dam water levels at a minimum operating level of 86 masl and a full supply level of 98.2 masl. The Hazen-Williams equation was used to determine the operating level required for a flow of 280 Mℓ/d. The results were compared against the Depth-Storage Curve for the dam to compare the percentage storage versus the minimum water level required to discharge the maximum flow of 280 Mℓ/d. Based on the hydraulic gradient lines it would be possible to discharge 280 Mℓ/d from the Kirkwood Canal to the Coerney Dam, even when the dam is at the full supply level. A residual pressure of approximately 3 m would be available at the tie-in point to the existing Nooitgedagt WTW supply pipeline.

Glass reinforced polyester (GRP), ductile iron and steel pipes were considered suitable pipe materials, based on the pipeline diameter and expected working pressures. Given the advantages of steel pipes, it is proposed that this be considered as preferred pipe material for the proposed pipelines.

A preliminary wall thickness calculation was undertaken based on limited geotechnical information, hydraulic analyses and external loads. Based on the assumptions and calculations the proposed pipelines will be DN 1400, Grade X52 steel with a yield strength of 358 MPa and a recommended wall thickness of 10 mm. The maximum soil cover of 3.4 m will have to be adhered to during the detailed design of the vertical alignment of the pipelines. A wall thickness of more than 10 mm might be required if the E-value of the native soil is worse than expected or if the E-value of the bedding material is lower than anticipated.

3.3 New offtake at Kirkwood primary canal

The proposed offtake from the Kirkwood primary canal will be located downstream of the Coerney syphon intake, and just upstream of the long weir, which will provide head to the new intake. It is proposed that the new offtake comprises an adjustable weir that would allow for regulating the flow that could be discharged from the canal to the WTW or to Coerney Dam. At the offtake location, the canal has a floor level of 103.9 masl with the top of the long weir at a level of 105.8 masl. The length of the adjustable weir (or sluice gate) must therefore be such that the head required would be less than the overflow level of the long weir. **Table 8** shows the head required for different weir widths to discharge different flows, e.g., for a weir width/length of 1.0 m, a discharge head of 1.426 m would be required for a flow of 250 Mℓ/d.

Table 8: Kirkwood canal offtake - Flow depths for different flows and weir widths (DWS, 2020)

Width of weir (m)	Flow (Mℓ/d)					
	50	100	150	200	250	280
0.5	0.774	1.229	1.610	1.950	2.236	2.441
1.0	0.488	0.774	1.014	1.229	1.426	1.537
1.5	0.372	0.591	0.774	0.938	1.088	1.173
2.0	0.307	0.488	0.639	0.774	0.898	0.969
2.5	0.265	0.420	0.551	0.667	0.774	0.835
3.0	0.234	0.372	0.488	0.591	0.685	0.739

It is proposed that the floor level be raised at the off-take to a level of 104.2 masl to mitigate the risk of sediment being transported from the bottom of the canal to the pipeline. This leaves 1.6 m as the maximum head available to discharge a flow of 280 Mℓ/d, meaning that a 1.5m weir length would still allow just over 400 mm of freeboard. The water from the off-take will discharge into a wet well that will be piped through a magnetic flow meter. The display from the flow meter will be positioned next to the adjustable sluice gate, which will allow the weir to be adjusted to discharge a certain flow. The proposed offtake configuration is shown in **Figure 3**.

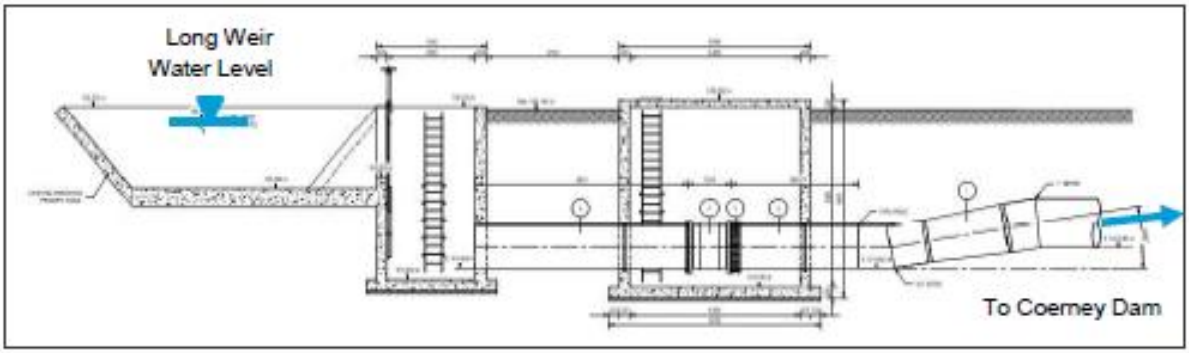


Figure 3: Section view of Offtake at Kirkwood Canal (DWS, 2020)

3.4 Coerney Dam Inlet/Outlet Chamber

The proposed dam will be supplied from the Kirkwood primary canal with a DN 1400 pipeline, which will also be used to transfer water to the tie-in point on the existing Nooitgedagt pipeline. The pipe for supplying water to and from the dam will bifurcate into an inlet and outlet branch at the outlet chamber at the downstream toe of the dam wall embankment. The inlet branch will have an isolation valve for shutting off the supply when the dam is full; this is to prevent spilling canal water. The outlet branch will be fitted with a non-return valve and an isolation valve upstream and downstream. The non-return valve will ensure that water can be automatically supplied from the dam in the event that the inlet has been shut to avoid spilling of the dam when it is full.

The isolation valves will ensure that the non-return valve can be serviced while the inlet pipe remains in operation. The inlet and outlet pipe branches will reduce from DN 1400 to DN 1200 at the bifurcation and reduce from DN 1200 to DN 1000 after the cross-connection before passing through the dam wall embankment in a concrete encasement. Both pipes will connect to a wet well outlet tower in the dam basin. The Inlet/Outlet chamber is shown in **Figure 4**.

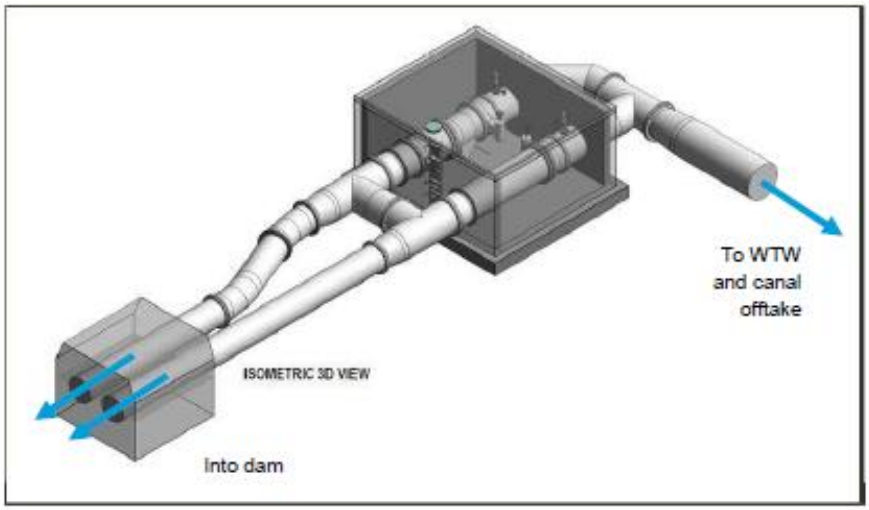


Figure 4: Isometric view of Coerney Dam Inlet/Outlet Chamber (DWS, 2020)

3.5 Tie in to existing Nooitgedagt WTW supply pipeline

A connection needs to be made into the existing 1400 mm diameter Nooitgedagt supply pipeline. The existing pipeline is manufactured from Grade B steel with a cement-mortar lining and bitumen fiberglass coating and has an 11 mm wall thickness at the connection point. The tie-in will be located downstream of the cross-connection with the Scheepersvlakte syphon and downstream of the existing high point in the existing supply line. The tie-in will comprise a 1400 mm x 1400 mm equal tee that will be cut into the existing pipeline. The branch of the tee will be fitted with an isolation valve should maintenance be required on this pipeline. The tie-in drawing is shown in **Figure 5**.

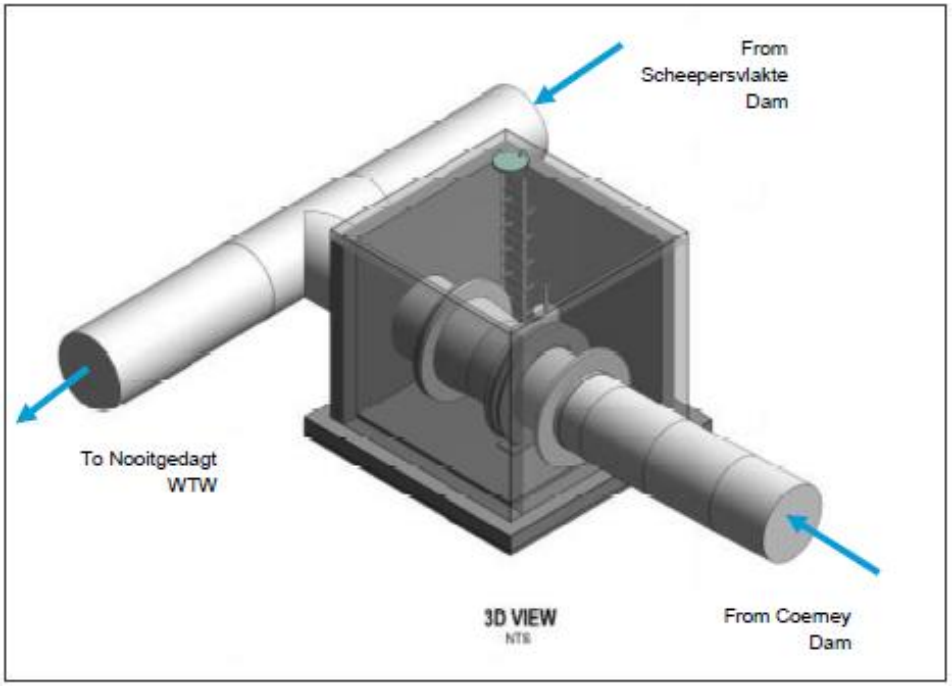


Figure 5: Isometric view of Tie-in to Existing Nooitgedagt Supply Pipeline (DWS, 2020)

3.6 Middle Addo Canal Crossings

The new supply pipeline to the Coerney Dam and the bypass pipeline will need to cross the Middle Addo canal. The approximate elevations and width of the canal at the points of crossing are indicated in **Table 9**.

Table 9: Middle Addo Canal details (DWS, 2020)

Canal Details	New Supply Pipeline to Lower Coerney Dam	Bypass Pipeline to WTW
Canal width	5.35 m	1.610
Centre line canal	82.43 masl[1]	82.23 masl[1]
Left Bank canal	83.91 masl[1]	83.73 masl[1]

The exact positions of the Middle Addo canal crossing must be verified during the detailed design of the pipelines. It is proposed that the pipeline be installed over the canal (above ground) not to impact the operation or integrity of the canal, and to facilitate easier maintenance if required. The 1400 mm diameter steel pipe will serve as the pipe bridge with concrete supports on either side of the canal. An air valve will have to be installed at the high point created by the canal crossing. The air valve will also serve as an access point into the pipeline for maintenance purposes. Additional protection of the exposed pipe may be required. A typical detail of the pipe bridge is shown in **Figure 6**.

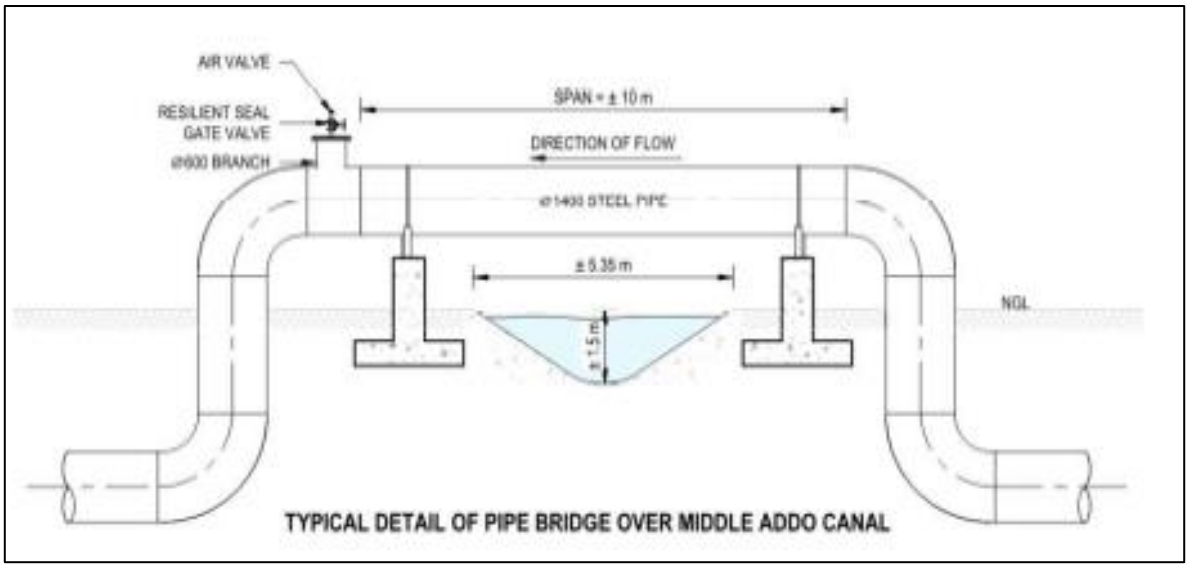


Figure 6: Typical detail of Pipe Bridge over Middle Addo Canal (DWS, 2020)

3.7 Proposed Coerney Dam spillway crossing

The position of the Coerney Dam spillway is not yet finalized. If the spillway is constructed on the left, it will have no impact on the proposed pipeline. If the Coerney Dam spillway is positioned on the right the proposed DN 1400 pipeline will need to cross it, in which event it is proposed that the pipeline crosses under the spillway just downstream of the stilling basin as shown in **Figure 7**. The pipeline will most likely be encased as part of the stilling basin's end sill.

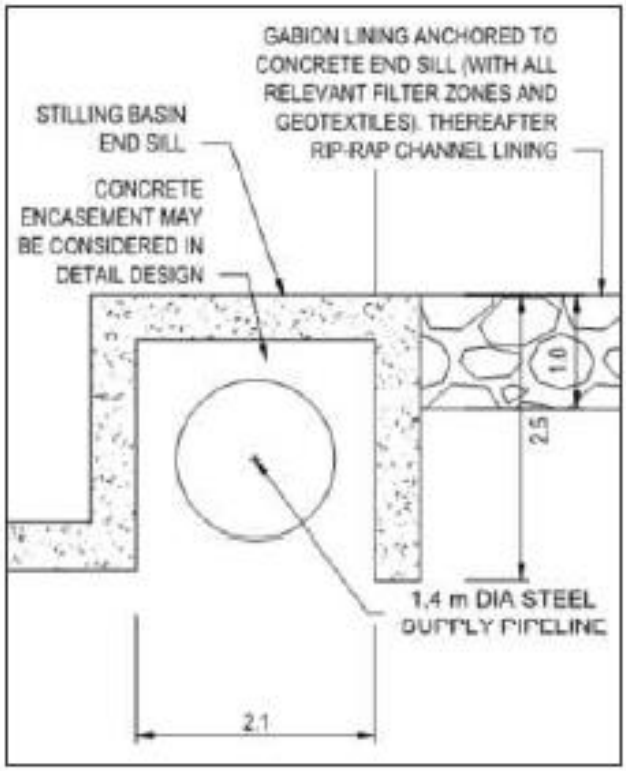


Figure 7: Typical detail of pipe underneath spillway (DWS, 2020)

3.8 Existing Nooitgedagt WTW supply pipeline crossing

The proposed pipeline from the Kirkwood primary canal to the Coerney Dam will have to cross the existing Nooitgedagt WTW supply pipeline. The proposed pipeline would need to cross under the existing Nooitgedagt WTW pipeline due to the limited soil cover on the existing pipeline at the point of crossing. The invert level at the proposed crossing is approximately 83.7 masl. The new pipeline will have a 300 mm clearance between the invert of the existing pipeline and the crown of the new pipeline. The existing pipeline will have to be excavated by hand to confirm the exact levels during the construction phase of the project and to ensure that no damage is done to the existing pipeline.

3.9 Syphon under Sundays River

An additional syphon under the Sundays River on the existing Nooitgedagt WTW supply pipeline is proposed to:

- Reduce the risk of supply failure in the event of damage to the existing syphon; and
- Mitigate the risk due to the new balancing storage being located on the opposite side of the river, relative to the WTW.

The additional syphon under the Sundays River will be concrete encased. The top of the reinforced pipe encasement should be below the riverbed level. The length of the encasement is assumed to be approximately 105 m (the same as the existing pipeline). It is proposed that the new syphon be located

upstream of the existing syphon at a suitable point to cross the river. The new syphon should be separate from the existing syphon at a suitable distance upstream. The additional syphon will potentially also be on private property and landowner discussions will need to be initiated.

An air valve chamber and a scour valve chamber will have to be installed, and tie-ins made into the existing pipeline. The air valve will also serve as an access point into the new pipeline for maintenance purposes. The tie-ins will comprise 1400 mm x 1400 mm equal tees that will be cut into the existing pipeline and installed on the new syphon pipeline. Isolating valves will be provided so that the new syphon can be isolated, as it will only be used if the existing syphon is damaged or when maintenance is required.

As-built drawings and/or information will have to be obtained of the existing syphon during the detailed design phase of the project. Apart from doubling the syphon it is also recommended that an adequate stockpile of replacement pipes be kept, to be able to quickly repair the pipeline in case of failure.

4 SCOPING PHASE METHODOLOGY

The NEMA Regulations of 2014, as amended identify three separate administrative processes for EIAs, depending on the nature of the activity. A Basic Assessment process (Listing Notice 1) is identified for those activities that have less of a possible detrimental impact to the environment. A Scoping and EIA process (Listing Notice 2) is necessary for those activities, which are identified as having more of a possible detrimental impact on the environment, whereas Listing Notice 3 relates to identified activities that would require environmental authorisation prior to the commencement of those activities in specific identified geographical areas only. The Scoping and EIA process is required for this project as the proposed dam triggers Activities 11, 15 and 16 from Listing Notice 2 as presented in **Chapter 1**.

4.1 Pre- Consultation with the Competent Authority

A pre-Consultation meeting was not held with the Department of Forestry, Fisheries and the Environment (DFFE) as the project description and process are well understood. However, a pre-application from was submitted to the department together with the Public Participation Plan in and approved in November 2021. On the 5th of June and the 9th of September 2020, the Minister issued directions regarding the measures to address, prevent and combat the spread of the COVID-19 relating to the National Environmental Management Permits and Licenses. One of the requirements provided in the directions is that a Public Participation Plan (PP Plan) shall be submitted to the Department of Forestry, Fisheries and the Environment (DFFE), in instances where a case officer has been assigned to the project then the Public Participation Plan shall be submitted to the case officer. It must be noted that the abovementioned directions have since been withdrawn effective from 22 Mar 2022.

4.2 Registration of the Application with the Competent Authorities

An Application for Environmental Authorisation has been completed and will be submitted to DFFE for review and consideration with this Draft Scoping Report.

4.3 Public Participation Process

A Public Participation Process (PPP) consistent with Chapter 6 of the NEMA EIA Regulations 2014, as amended (Government Notice R. 982 in Government Gazette No. 40772 of 07 April 2017) will be undertaken and will continue throughout the project. This report will be availed for public review as a means of identifying any issues and concerns. The Draft Scoping Report will also be issued out for public review to the following Commentary Authorities:

- Eastern Cape Department of Economic Development, Environmental Affairs and Tourism;
- Eastern Cape Department of Rural Development and Agrarian Reform;
- Nelson Mandela Bay Metropolitan Municipality;
- Sarah Baartman District Municipality;
- Sundays River Valley Local Municipality;
- Lower Sundays River Water Use Association;
- Department of Water and Sanitation (Eastern Cape Region);
- Department of Agriculture Fisheries and Forestry;
- South African Heritage Resources Agency (SAHRA); and
- Eastern Cape Heritage.

As discussed above, comments received during the review period will be included in the Final Scoping Report that will be submitted to DFFE for review and authorisation. To date, the PPP undertaken has included the following:

- the identification of Interested and Affected Parties (I&APs);
- the compilation of an I&AP database;
- the placement of site notices at visible and accessible locations close to the site;
- the placement of a newspaper advertisements in two local newspapers; and
- the distribution of Notification Letters to adjacent landowners and other parties on an on-going basis since the notification period commenced in November 2021.

The Draft Scoping Report will be issued out for public review and will be placed at the Kirkwood Public Library and Lower Sundays River Water Use Association Board. Other parties will be provided with copies of the report in softcopy format and hardcopy (if requested). Comments received during the public review will be included in the Final Scoping Report that will be submitted to DFFE for review and authorisation. An indication of the PPP can be referred to in **Appendix D.** Please see **Chapter 7** of this report for a detailed description of the PPP undertaken to date.

4.4 Draft Scoping Report

This report represents the Draft Scoping Report for the project and documents the findings of the Scoping Phase. The report also documents the issues identified through the site visits, consultation with the Competent Authorities and other Stakeholders, the Public Participation Process (PPP) as well as through the professional input of the relevant specialists identified, the project engineers and the GA Environment team.

All comments that will be received during the review of the Draft Scoping Report will be captured and responded to through a Comments and Response Report that will be included in the report. Comments received to date have been included in this report. All I&APs registered on the Project database will be informed of the availability of the Draft Scoping Report for public review. I&APs will be provided with another opportunity to submit their comments during the Environmental Impact Assessment (EIA) Phase of the project. Refer to see **Appendix D** for all Public Participation related documents**.**

Specialist studies relevant to the proposed project have been identified and specialist investigations will be conducted during the EIA Phase. This will be pending the approval of the Plan of Study for EIA by DFFE. DFFE will advise if additional outside those identified are required to support the EIA process.

4.5 Review of the Scoping Report by Competent Authorities

DFFE as the competent Authority for the listed activity must, within 43 days of receipt of the Final Scoping Report that has been subjected to 30 days of public review as a Draft Report, accept the Final Scoping Report and Plan of Study for EIA in writing should no amendments be required, or shortcomings be identified therein. Upon acceptance of the Scoping Report, the Environmental Assessment Practitioner (EAP) may then proceed with the tasks contemplated in the Plan of Study for EIA.

The authority can also reject the Scoping Report for not following legislative procedure if any of the required steps were not undertaken. In terms of Regulation 22 (b) of Government Notice R. 982, the Scoping Report may be amended and resubmitted by the EAP should it be rejected. On receipt of the amended Scoping Report and Plan of Study for EIA, the competent authority will then reconsider the application. Should the Scoping Report be approved, the amended Scoping Report will then be made available for public review and comment prior to submission to the Competent Authority.

The authority may also advise the EAP of matters that may hinder the success of the EIA application or matters that may prejudice the success of the application.

4.6 Environmental Impact Assessment Phase

The EIA Phase will commence after the competent authority has accepted the Scoping Report and advised the EAP to proceed with the tasks contemplated in the Plan of Study for EIA based on Regulation 23(1) (a) of Government Notice R. 982.

4.7 Public Participation Process (PPP) for EIA Phase

The PPP will be documented and included in the Environmental Impact Report (EIR). The PPP will be undertaken in accordance with the Plan of Study for EIA. The project I&APs will be updated on all project developments throughout the EIA Phase. A summary of comments received from the registered I&APs, the date of their receipt and responses of the EAP to those comments will be provided in the Comments and Response Report that will be updated during all project phases. All copies of any representations, objections and comments received will also be submitted to the competent authority together with the EIR.

4.8 Specialist Studies

The following specialist investigations will be commissioned once the Scoping report has been approved by DFFE:

- Fauna and Flora Survey;
- Heritage Impact Assessment – Compliance Statement;
- Desktop Paleontological Study;
- Agricultural Impact Assessment; and
- Aquatic Biodiversity Impact Assessment.

A Geotechnical investigation has already been commissioned by DWS. These Specialist Studies that will be undertaken during the EIA phase are presented in the Plan of Study for EIA in **Chapter 9** of this report. These Specialist Studies will be documented, and recommendations formulated by the specialists for the proposed development. The full impact of the proposed construction of the Coerney dam and the associated infrastructure will be described and assessed in detail in the EIR in line with the specialist studies that have been undertaken. Assumptions, uncertainties, and gaps in knowledge will be highlighted in the reports. The potential environmental impacts will also be discussed in the Specialist reports.

4.9 Environmental Impact Report

The EIR will contain all information necessary for the competent authority to consider the application and to reach a decision. It will detail the process followed during the EIA Phase including details of the PPP and an assessment of each identified potentially significant impact. An Environmental Management Programme (EMPr) will be provided as part of the EIR. The EMPr will discuss all impacts and proposed mitigation measures for the impacts associated with all the project phases which as outlined in Appendix 4 of the NEMA EIA regulations, 2014, as amended are as follows:

- Planning and Design;
- Pre-Construction activities;
- Construction Activities;
- Rehabilitation phase of the environment after construction and where applicable post closure; and
- Where relevant, operation activities.

4.10 DFFE Decision on the EIR Report

Following the review of the EIA Report, the DFFE will issue DWS with their decision on the application which could either be the rejection of the application or the issuing of an Environmental Authorisation.

4.11 Appeal Period

After a decision has been reached by DFFE, Chapter 2 of the National Appeal Regulations 2014 makes provision for any affected person to appeal against the decision. Within 20 days of being notified of the decision by the competent authority, the appellant must submit the appeal to the appeal administrator. An appeal panel may be appointed at the discretion of the delegated or organ of state to handle the case and it would then submit its recommendations to that organ of state for a final decision on the appeal to be reached. GA Environment will communicate the decision of the Provincial Authority and the way appeals should be submitted to the Minister and to all I&APs as soon as reasonably possible after the final decision has been received.

5 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This Chapter serves to describe the environmental setting of the area identified whilst the environmental issues that were identified to be of significance are discussed in **Chapter 8** of this report. The Chapter will also provide a description of the overall character and other sensitivities that were identified in the surrounding environment.

The proposed Lower Coerney Balancing Dam will be constructed in an ecologically sensitive area. It was noted during the site visit to the area, that approximately 36ha of the land located to the west of the footprint has already been cleared in preparation of the new citrus area.

5.1 Climatic Conditions

The town of Addo is influenced by the local steppe climate. During the year, there is little rainfall in Addo. This location is classified as BSh by Köppen and Geiger. The summer season is in December end in March. The average annual temperature in Addo is 18.6 °C. About 502 mm of precipitation falls annually. The driest month is May, with 23 mm of rainfall. Most precipitation falls in November, with an average of 62 mm. **Figures 8** and **9** presents the annually weather conditions in Addo.

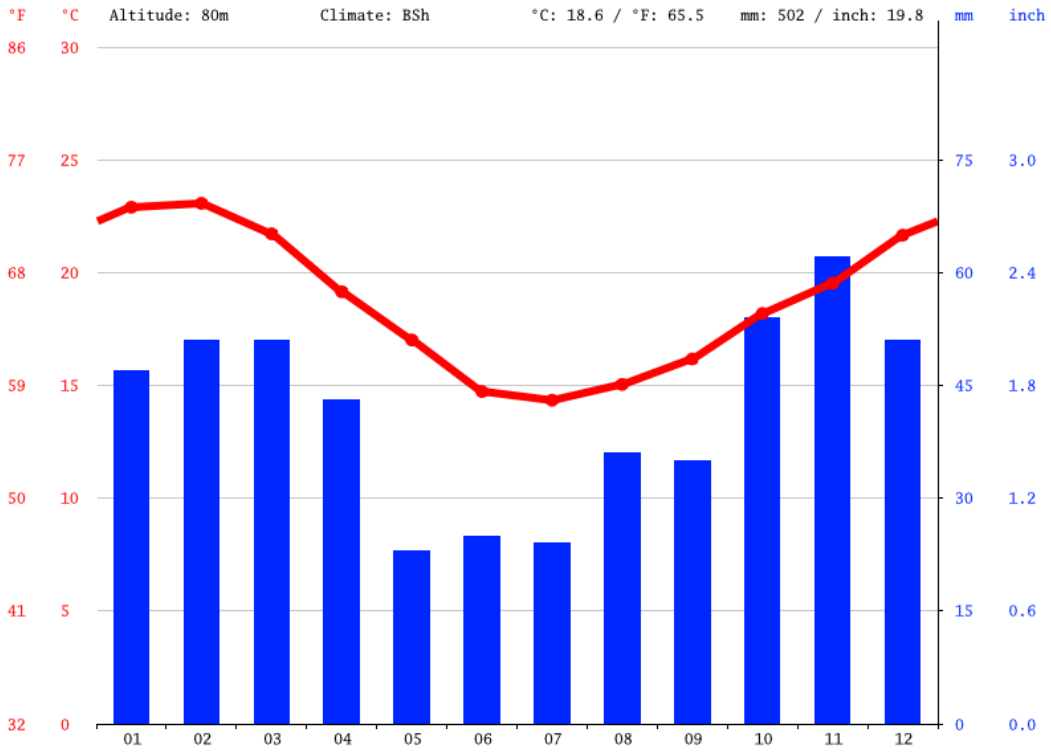


Figure 8: Climate Graph of Monthly weather conditions (Climate-Data.Org, 2022)

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	22.9 °C (73.2) °F	23.1 °C (73.5) °F	21.7 °C (71.1) °F	19.2 °C (66.5) °F	17 °C (62.6) °F	14.7 °C (58.5) °F	14.3 °C (57.8) °F	15 °C (59.1) °F	16.2 °C (61.1) °F	18.2 °C (64.7) °F	19.5 °C (67.2) °F	21.7 °C (71) °F
Min. Temperature °C (°F)	17.7 °C (63.8) °F	18 °C (64.3) °F	16.5 °C (61.8) °F	13.7 °C (56.7) °F	11.3 °C (52.3) °F	8.8 °C (47.8) °F	8.3 °C (47) °F	8.9 °C (47.9) °F	10.1 °C (50.2) °F	12.4 °C (54.3) °F	14 °C (57.2) °F	16.3 °C (61.4) °F
Max. Temperature °C (°F)	29.3 °C (84.7) °F	29.5 °C (85) °F	28.3 °C (82.9) °F	25.8 °C (78.5) °F	24 °C (75.3) °F	21.8 °C (71.2) °F	21.6 °C (70.9) °F	22.4 °C (72.4) °F	23.5 °C (74.3) °F	25 °C (77) °F	25.9 °C (78.6) °F	28 °C (82.4) °F
Precipitation / Rainfall mm (in)	47 (1.9)	51 (2)	51 (2)	43 (1.7)	23 (0.9)	25 (1)	24 (0.9)	36 (1.4)	35 (1.4)	54 (2.1)	62 (2.4)	51 (2)
Humidity(%)	65%	67%	67%	66%	60%	55%	54%	57%	61%	64%	64%	64%
Rainy days (d)	6	7	7	5	3	3	3	4	5	6	6	7
avg. Sun hours (hours)	8.0	7.4	7.6	7.5	7.8	7.7	7.7	7.9	8.0	7.9	8.2	8.0

Figure 9: Weather averages in Addo (Climate-Data.Org, 2022)

The warmest month of the year is February, with an average temperature of 23.1 °C. In July, the average temperature is 14.3 °C. It is the lowest average temperature of the whole year. The difference in precipitation between the driest month and the wettest month is 39 mm. The average temperatures vary during the year by 8.7 °C. The month with the highest relative humidity is February (66.84 %). The month with the lowest relative humidity is July (53.99 %). The month with the highest number of rainy days is December (9.13 days). The month with the lowest number of rainy days is July (3.83 days).

5.2 Biodiversity

The variety of plant and animal life in the world or in a particular habitat, a high level of which is usually considered to be important, and desirable is known as biodiversity. Due to the continual development and loss of biodiversity, Biodiversity Conservation Plans have become vital for conservation of flora and fauna habitats and ecosystems. The purpose of a Biodiversity Conservation Plan is to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing a map of biodiversity priority areas, referred to as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). According to the Eastern Cape Conservation Biodiversity Plan, the proposed site falls within a CBA (**Figure 10**). The development of the dam will require the vegetation clearance of approximately 77ha. As already indicated, approximately 36ha has already been cleared by the farming community in preparation for the new citrus fields. An Ecological assessment will be required to determine if any protected tree species will potentially be affected by the proposed dam and the associated infrastructure. Should the proposed project require the removal of any protected tree species, then the application will have to be lodged with DFFE.

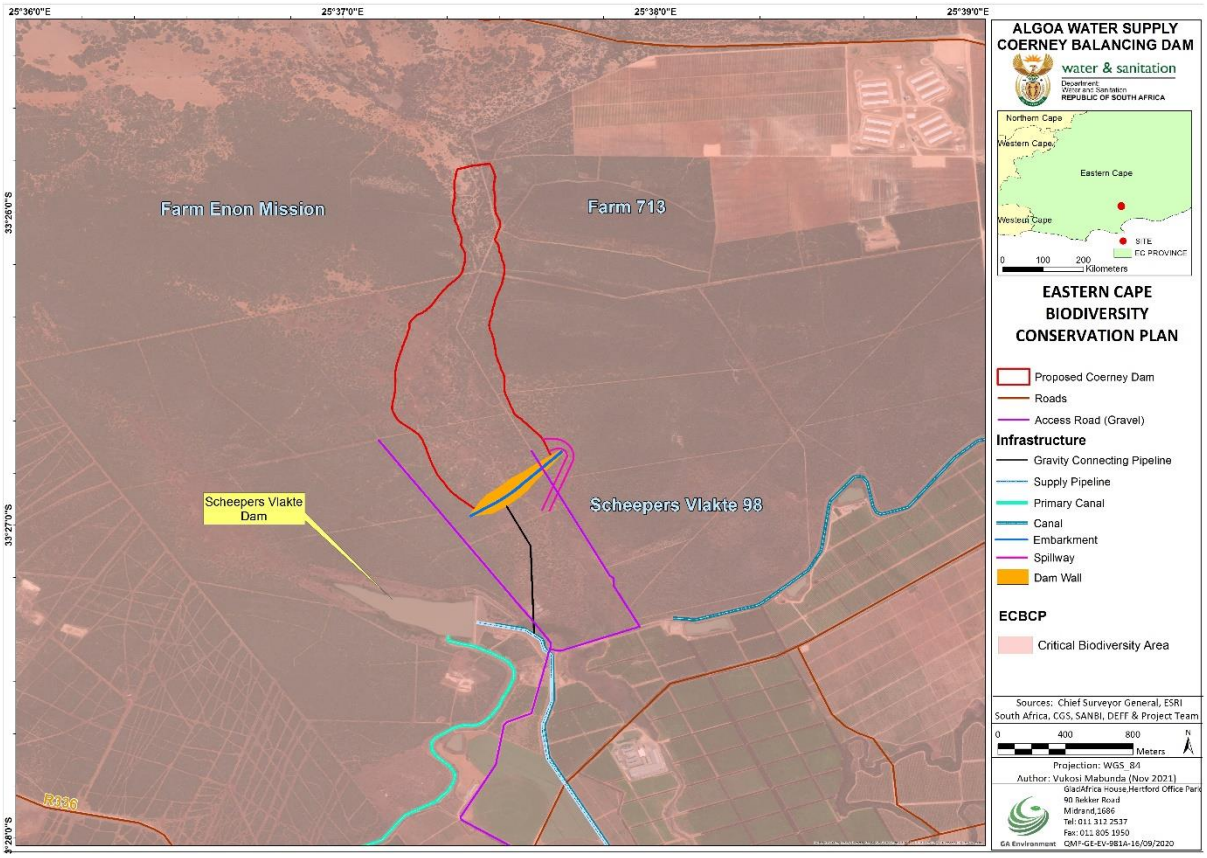


Figure 10: Eastern Cape Conservation Biodiversity Plan

The site is situated within the Albany Alluvial and Sundays River Thicket Vegetation units as indicated in the Vegetation Map (**Figure 11**). The Albany Alluvial vegetation type is found in the Eastern Cape between East London and Cape St Fransis. This alluvial unit is embedded within the Albany Thicket Biome. It is made up of two major vegetation patterns: riverine thicket and thornveld (*Vachellia natalitia*). The riverine thicket tends to occur in the narrow floodplain zones in regions close to the coast or further inland, whereas the thornveld occurs in the wide floodplains further inland. This vegetation is classified as endangered (EN) by Mucina and Rutherford (2006). The conservation target is 30% of which only 6 % is Greater Addo Elephant National Park, Baviaanskloof Wilderness Area, Loerie Dam, Springs, Swartkops Valley and Yellowwoods Nature Reserves and the Double Drift Reserve Complex.

Sundays Valley Thicket vegetation type is found in the Eastern Cape, at an altitude of 0-800m. It is characterised by undulating plains and low mountains and foothills covered with tall, dense thicket, where trees, shrubs and succulents are common, with many spinescent species. According to Mucina and Rutherford (2006), this vegetation type is classified as Least threatened (LT). The conservation target is19 %, with portions of this statutorily protected in Greater Addo Elephant National Park, Groendal Wilderness area as well as in Swartkops Valley and Springs Nature Reserves. Private

conservation areas, especially game farms (Kuzuko, Koedoeskop, Schuilpatdop, Tregathlyn, Citruslandgoed, Voetpadskloof) also conserve portions of the vegetation unit.

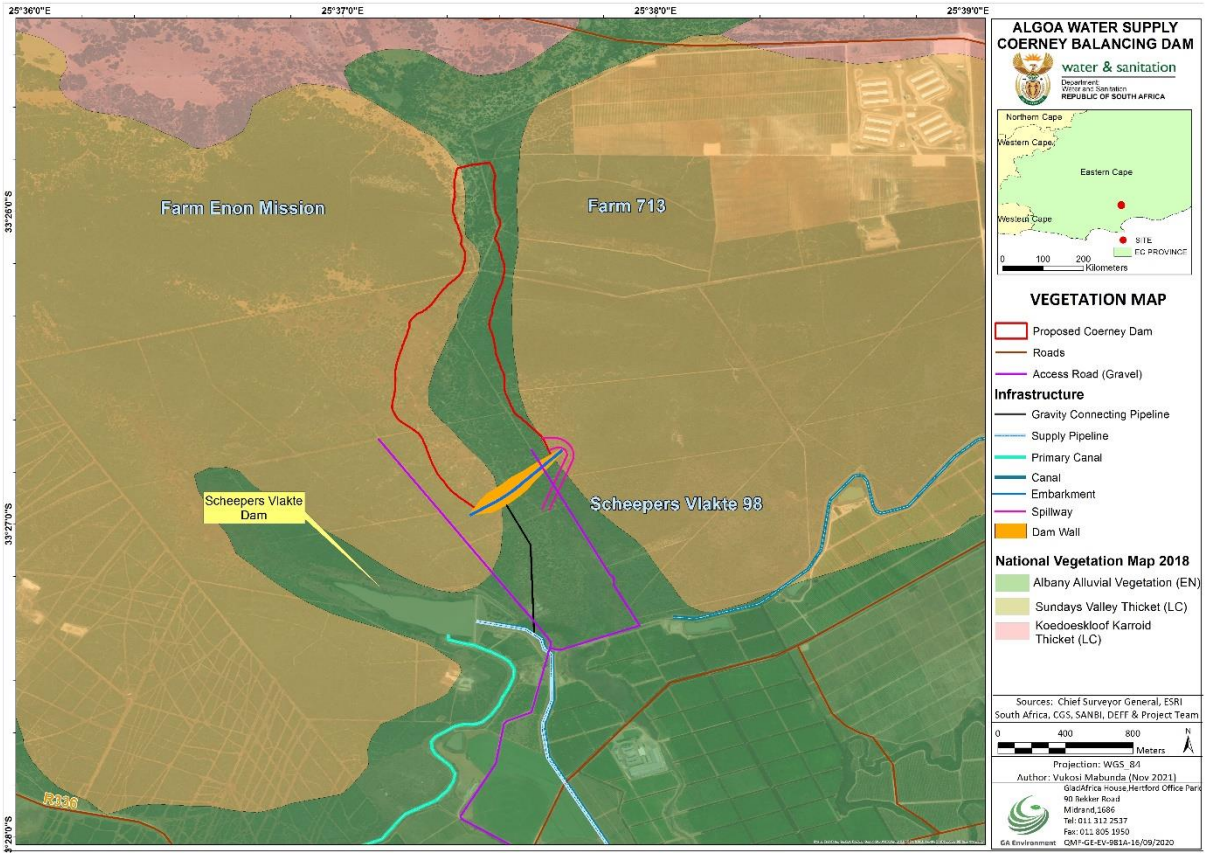


Figure 11: Vegetation in relation to the proposed site

5.3 Hydrology

The hydrological setting of the project area is presented in **Figure 12** which is within the Mzimvubu - Tsitsikamma Water Management Area (WMA 7) (NWA, 2016) and the South Eastern Coastal Belt aquatic ecoregion (Dallas, 2007). The watercourses which may potentially be impacted by the construction of the Coerney Dam includes the N40D - 08561 Sub-Quaternary Reach (SQR) or Coerney River as well as the non-perennial/ephemeral tributary along which the proposed dam will be constructed, which drain the N40D quaternary catchment. The site hydrological conditions are presented in **Figure 12**.

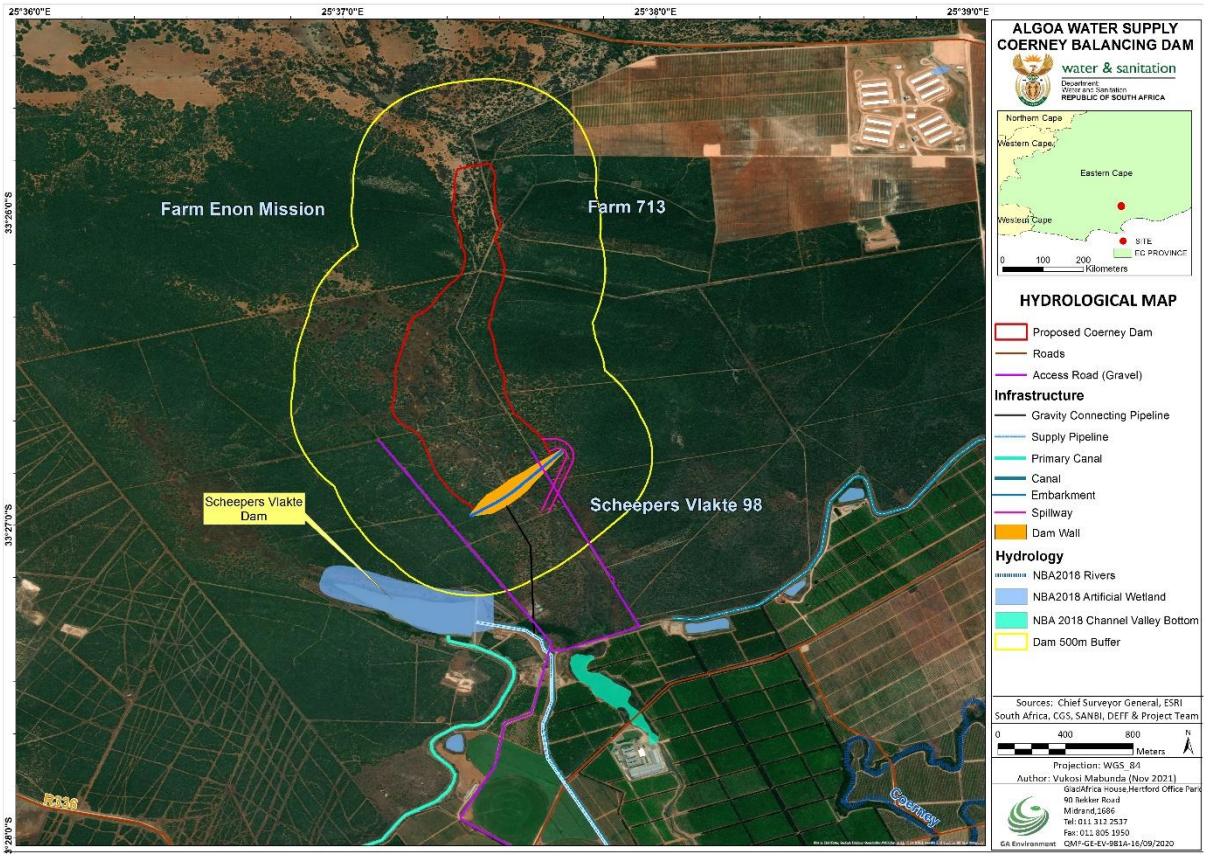


Figure 12: Hydrological conditions of the Site

The Draft Scoping Report will be submitted to the Department of Water and Sanitation (Eastern Cape Region) for review and comment. A site inspection by the DWS Eastern Cape Region (DWS EC) and the EAP was undertaken in May 2022. DWS EC Region does not foresee any issues with the application and has since opened Phase 3 of the application on e-WULAAS. All comments provided by the authorities will be captured and addressed accordingly during the EIA Phase of the project.

5.4 Geology and Soils

Geologically, the area of interest falls within the Algoa Basin which is one of the complex grabens and half-graben structures along the present eastern and southern coast associated accumulations of Jurassic and Cretaceous deposits. These basins formed along the margins of the newly formed African continent at the time of the break-up of Gondwana (Newton et al., 2006). According to the 1:250 000 geological map (Port Elizabeth Sheet 3324, Council for Geoscience), the dam is underlain by the strata of the Sunday River Formation and Kirkwood Formation (**Figure 13**). All are part of Uitenhage Group.

According to Aurecon (2019), the older Kirkwood Formation consists of porous and permeable, coarse- to medium-grained, buff- and olive colored lithic sandstone. Sandstone beds may be up to several meters thick and of variable lateral extent, interbedded with thick (often more than 30 m thick), red and greyish green siltstones and mudrocks. The younger Sundays River Formation overlies

and appears to grade laterally into the Kirkwood Formation. This Sundays River Formation consists of thin grey sandstones, siltstones and mudrocks. The sandstones are less porous and permeable than the older Kirkwood strata. The oldest Enon Formation sediments of the Uitenhage Group are located to the north of the area of interest and do not impact directly on the discussion on the prevailing geological and geotechnical conditions of the respective sites (Aurecon, 2019). Refer to **Figure 13** for the geology of the study area.

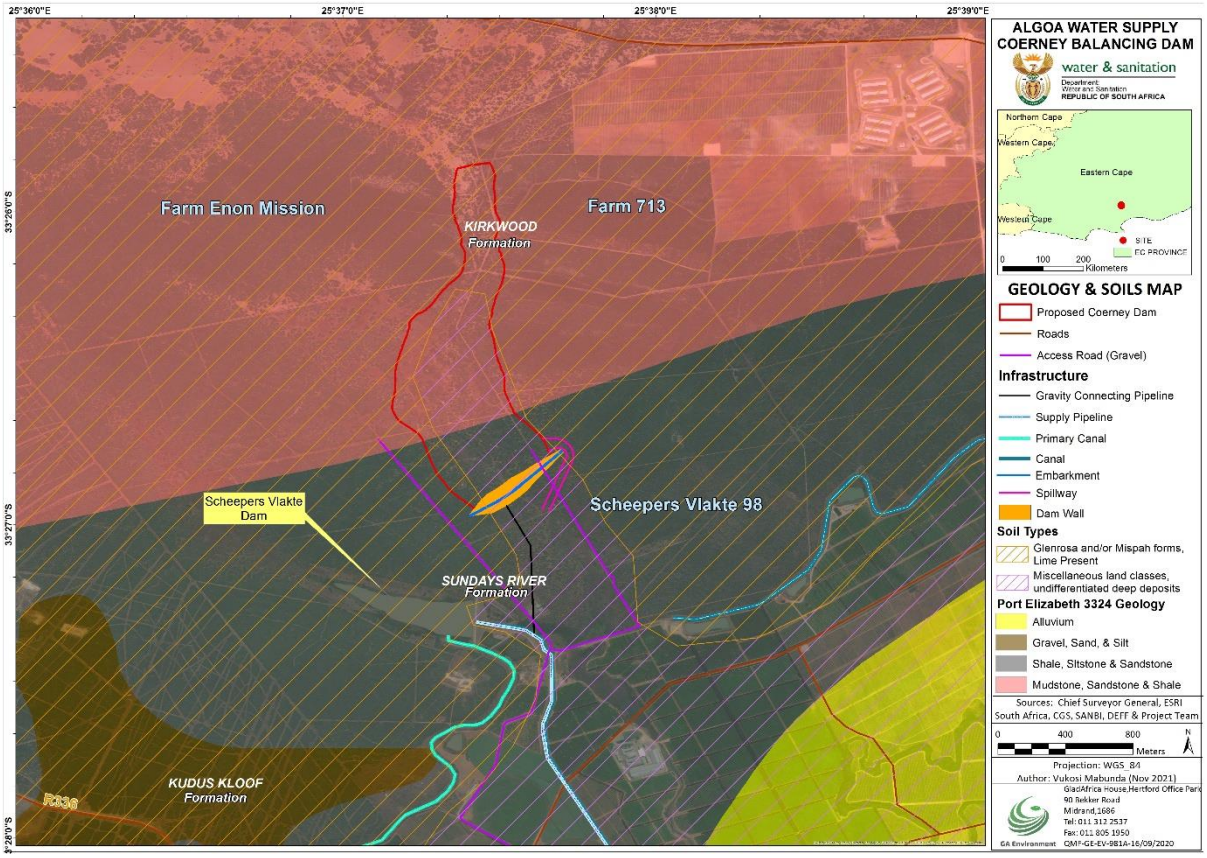


Figure 13: Geology of the study area

The study area is underlain by the Glenrosa and/or Mispah soils forms with lime and Miscellaneous land classes, undifferentiated deep deposits. The Mispah soil form is characterised by an Orthic A – horizon (topmost layer of a soil profile commonly known as the topsoil, usually a darker colour than underlying layers because of the presence of decomposed organic matter) overlying hard rock. Mispah soil is horizontally orientated, hard, fractured sediments which do not have distinct vertical channels containing soil material. There is usually a red or yellow-brown apedal horizon with very low organic matter content. The Glenrosa soil form is a combination of an Orthic A horizon overlying a lithocutanic B horizon (a mineral subsurface horizon which is a zone of accumulation through illuviation, alteration or weathering). The soil forms have an indirect impact on the development which is dealt with in Section 5.6.

According to Aurecon (2019), the cumulative thickness of the various soil strata varies between just less than 3 m to almost 8 m. Soil cover appears shallowest on the right flank, extending into the river section, while on the left flank soil thicknesses are generally between 7 m and 8 m. The soil thickness solely is therefore not reason alone to translate into the selection of a specific structure. Of significance in terms of the soil strata, however, is the presence of a gravel horizon at depth. This horizon blankets the entire site, including the dam and spillway footprint as well as the basin area, and has implications for the dam type and founding depths.

5.5 Geohydrology

The following geohydrological information is summarized and taken from the geotechnical investigation undertaken by Aurecon (2019), the chief concern regarding foundation permeability is linked to the presence of the gravel sand horizon, which is known to be present across the entire dam footprint. If left untreated, there would be a risk stratum functioning as a 'buried channel' or preferential seepage path beneath the embankment. The consequences could then potentially be manifested in the form of uncontrolled seepage and the inability of the reservoir to fill and, in the worst case, internal erosion and failure.

Natural groundwater levels appear to mirror topography to produce a groundwater flow direction downstream in a roughly southerly direction. The hydraulic gradient is steep, around 0.03 – 0.05 which shows that the permeability of the saturated rocks is very low, as one would expect from the Kirkwood Formation mudstones, siltstones and sandstones. Even with the steep hydraulic gradients, the flow rates will be very low.

The groundwater table lies below the alluvial gravels. However, after constructing the dam, water can be expected to leak through the upper, near-surface layers and saturate the gravel layer. The leakage may be slow due to the presence of clayey material in places, and with time it may reduce as additional clayey and silty material accumulates on the bottom of the dam. The hydraulic gradient, however, will be high and if the gravels are highly permeable, water will be able to flow relatively rapidly in this layer. The flow rate through the gravels, however, may not be a function of the permeability of the gravels but rather the leakage rate through the base of the dam, as this latter flow rate may be less than that of the gravels themselves.

The leakage to the gravels and the underlying hard-rock geology would only produce a very limited impact on the hydrogeology of the area. The underlying hard-rock's permeability is probably too low to receive much water, and therefore the effect of the dam will likely be localized and small. The

gravels have been discussed above, but the net effect on these will likely also be small because they are unlikely to be continuous for a great distance, and even if there are it is unlikely that they will be highly permeable throughout their length. This however, is not known but 2D resistivity surveys can assist in mapping the gravel layer (Aurecon, 2019).

5.6 Seismicity

It was mentioned earlier that the Algoa basin is a half-graben structure. Such a basin is defined by faulting, in this case the northern boundary and the relative subsidence of the 'fault-defined' block (horst) in effect created the basin in which the sediments accumulated (Aurecon, 2019). The Algoa basin is known to be more complex than most, with diagonal faults cutting the horst block. Several other prominent faults are recognised in the general area, including the Coega Fault which extends from west of the Groendal Dam to beyond the mouth of the Coega River. This fault has a vertical displacement over 2000m.

These prominent NW to SE trending faults are as close as 35 - 40km from the proposed balancing dam sites. While the sediments within the Algoa Basin are not significantly deformed, and only display a nominal shallow dip towards the present coast, these basins are located within the Cape Fold Belt and the older Table Mountain Group strata are intensely folded. These shallow dips of approximately 10 degrees are seemingly confirmed by detailed mapping of the Scheepersvlakte Dam foundations (Aurecon, 2019).

5.7 Heritage Resources

According to the GIS dataset for Cultural Heritage Resources, there are no sensitive cultural heritage features situated within close proximity of the site. The Department of Forestry, Fisheries and the Environment, screening tool revealed that the proposed dam development will be located within an area of low archaeological and cultural heritage sensitivity (**Figure 14**).

Figure 14: Archaeological and Heritage Sensitivity (DFFE Screening Tool, 2021)

The DFFE screening tool has revealed that the proposed development is located within an area of High Palaeontological Sensitivity as per the SAHRIS Palaeo Sensitivity map. As such, a desktop Palaeontological Impact Assessment (PIA) will be undertaken by a qualified palaeontologist. The Draft Scoping Report will be provided to the Eastern Cape Heritage Offices as well the South African Heritage Resources Agency (SAHRA) for comment.

5.8 Socio economic conditions

The Sundays River Valley Local Municipality (SRLM) is a local municipality in the Eastern Cape, South Africa. It has a total population of nearly 70,000 people. The SRLM is a Category B municipality situated within the Sarah Baartman District Municipality. It is approximately 50km from the COEGA Industrial Zone in the Nelson Mandela Bay Metro. It is one of seven municipalities in the district. The valley is characterised by harsh climate conditions, with summer temperatures rising more than 40°C. Rainfall is spread over the year and is between 250-500mm per annum. The valley is also characterised by wide, fertile flood plains and is associated with low-lying land and steep, less fertile slopes. The area outside the Sundays River Valley includes the Paterson area, the coastal belt, and the west of Alexandria. The municipality boasts ecotourism and agricultural potential. The Addo Elephant National Park and citrus production are two important economic drivers in the Sundays River Valley

Municipality. SRLM consists of eight (8) municipal wards. The proposed development is located in Ward 8.

5.8.1 Population

Although Statistics South Africa recently undertook the Census 2022 data, the data is yet to be finalized and made available to the public. At the time of compilation of this report, the official Census data was from the outdated 2011 period. According to the 2011 census, the population of Ward 8 was only 9 327, less than 10% compared to the population of the district. The population consisted primarily of African and Coloured groups with 64% of the population being black African and 31% Coloureds. The gender distribution was evenly balanced with 52% male and 48% female (**Figure 15**).

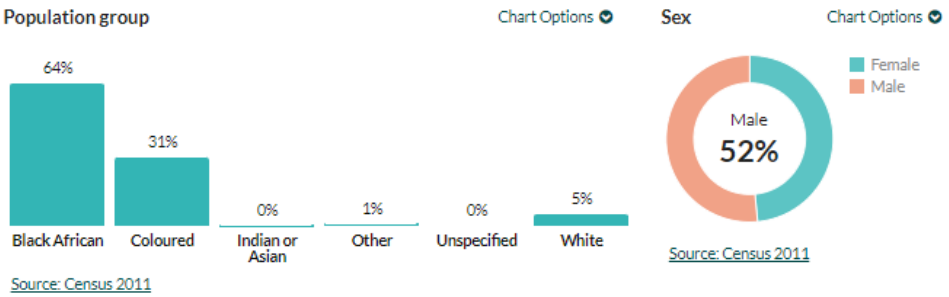


Figure 15: Madibeng Local Municipality Population Distribution (Wazimap, 2022)

5.8.2 Language dynamics

The Eastern Cape Province is known to be an area for the Xhosa Nation. According to Census 2011, IsiXhosa was the dominated language in the area with 57% of the population speaking IsiXhosa (**Figure 16**).

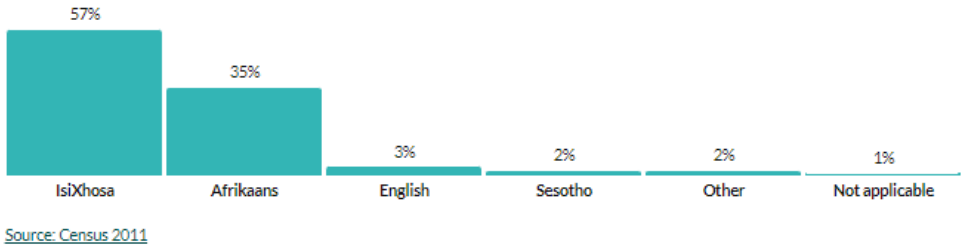


Figure 16: Population by language most spoken at home

5.8.3 Employment

Employment is a major concern for South African as a whole with the employment rate at record lows in recent years. According to census 2011, the ward had just below 50% employment rate, 20% higher than that of the district municipality and nearly double the rate of the province. The employment rate for the ward was considerably high and may be attributed by the citrus farms in the area. According

to the same data, over 70% of the employed population were employed in the formal sector. A graph representing the characteristics of employment is provided in **Figure 17**.

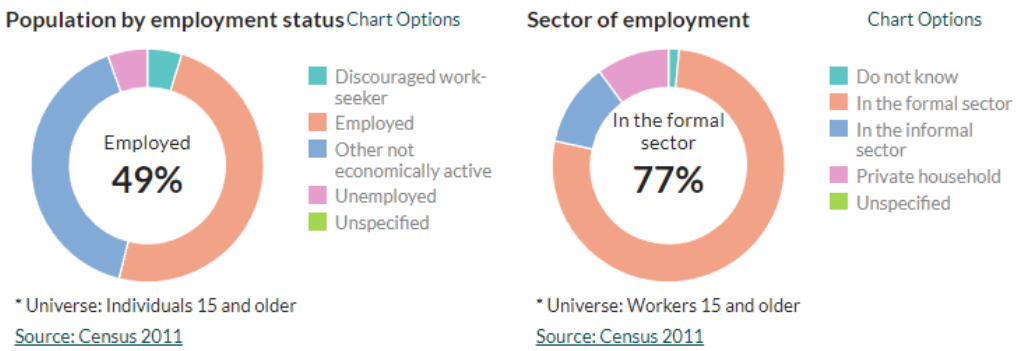


Figure 17: Population by employment

5.8.4 Annual Household Income

The average annual household income was R29 400.00, about the same as the amount in Sarah Baartman District Municipality and about double the amount in Eastern Cape which was R14 600. Majority (27%) of the households earned an average ranged of R20 000 – R40 000 followed by 25% ranging between R10 000 – R20 000. It must be noted that there was at least 10% of the households with no income (R0) and none of the households were over the threshold of R 600 000. Refer to **Figure 18**.

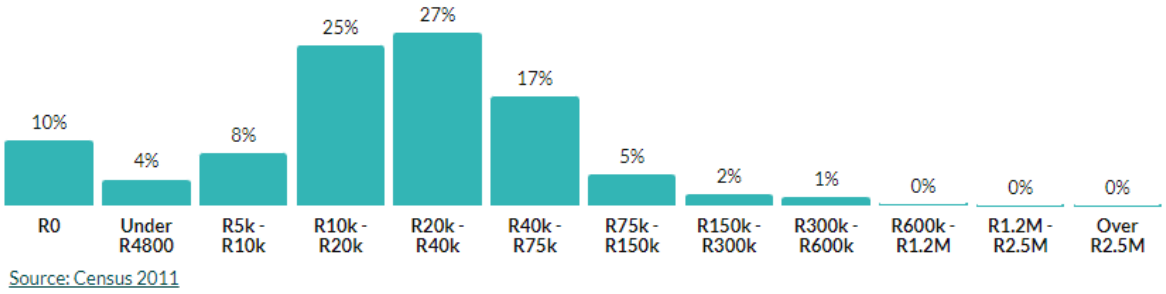


Figure 18: Annual Household Income

5.8.5 Educational Level

Education levels in society can be closely linked to the employment structure. It can be argued that an educated society will likely result in higher employment rates. According to the 2011 Census, the ward had a good education rate with only 7% of the population without any form of education. The educated population ranged between some primary to undergrad level. Slightly over 50% of the population had secondary education. However, less than 20% of the population had matric or higher educational level and only 1% had post-matric educational level. It must be noted that the data was based on the individuals 20 years and older. Refer to **Figure 19** for the education level.

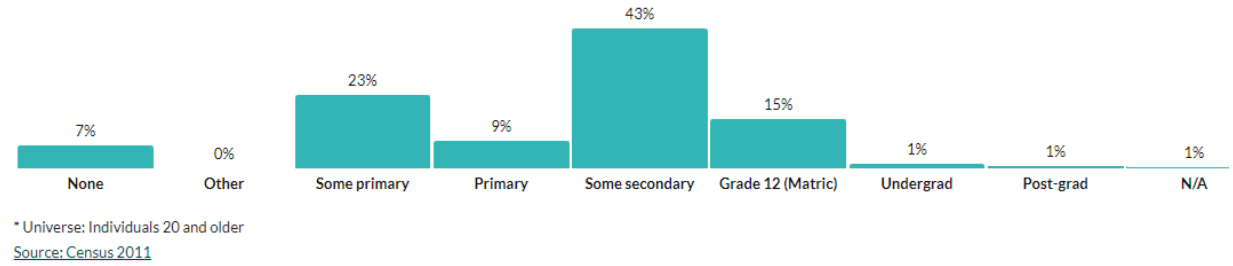
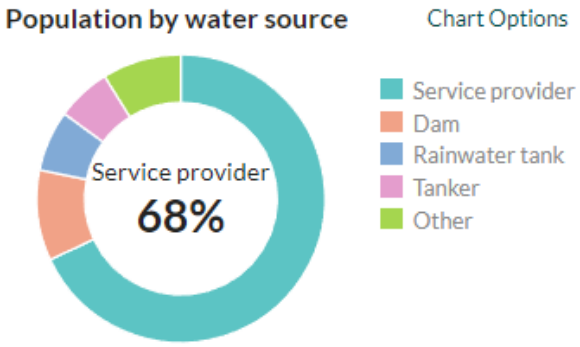


Figure 19: Educational Level

5.8.6 Access to Water

Comparable with low employment opportunities, South Africa has a major service delivery setback. Service delivery refers to the provision for basic services such as water and sanitation, electricity, etc. to communities by the corporate or governing body. Water is a basic human need and accessibility to water can be obtained by communities from various water sources. According to the 2011 census, 68% of the population within Ward 8 obtained their water from a service provider, the second most water source was in the form of dams (10%). It therefore important for the proposed dam to be developed as there is a good portion of the population relies on dams for water. Refer to **Figure 20** for the water structure.



Population by water source (Table SOURCEOFWATER) Explore and download this data

Column	Sundays River Valley Ward 8 (21006008)		Sarah Baartman		Eastern Cape	
Service provider	68%	6,347	79.9%	360,010	56.9%	3,730,201
Dam	10.2%	947	4%	17,803	2.7%	180,096
Rainwater tank	6.8%	638	3.5%	15,946	4.9%	318,564
Tanker	6.1%	570	1.8%	8,080	2.8%	183,734
Other	8.9%	827	10.8%	48,745	32.8%	2,149,459

Figure 20: Population by Water Source

6 ALTERNATIVES

In terms of the EIA Regulations published in Government Notice (GN) R982 of 2014, as amended in 2017, feasible and reasonable alternatives must be identified and considered within the Environmental Scoping phase and will be assessed in greater detail during the EIA Phase as per Appendix 2 and Appendix 3 respectively.

According to GN R 982 of the EIA Regulations (2014), an alternative is defined as *"…in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the:*

(a) property on which or location where it is proposed to undertake the activity;

(b) type of activity to be undertaken;

(c) design or layout of the activity;

(d) technology to be used in the activity;

(e) operational aspects of the activity; and

Includes the option of not implementing the activity."

In terms of Section 24 of NEMA, the proponent is required to demonstrate that alternatives have been described and investigated in sufficient detail during the EIA process. Several options associated with the construction of the dam and for improving the assurance of water supply were considered. The options (alternatives) for the development of the Scheepersvlakte Balancing Dam and water supply to the Nooitgedagt Water Treatment Works (WTW) were identified and undertaken by DWS during the prefeasibility and feasibility assessments in 2019 (Aurecon, 2019; DWS, 2019). The prefeasibility and feasibility options considered are discussed in this chapter.

The key factors which determined the reliability of the supply to Nooitgedagt WTW were as follows:

- A limited balancing capacity in Scheepersvlakte Dam, which is operated at a capacity of 550 000 m^3 to avoid spillages, although the dam has a total capacity of 820 000 m^3.
- There is a risk of failure of the aging upstream canal, syphon and weir infrastructure, such as the May 2017 failure of the main canal. Additional future balancing capacity should be provided to supply 210 Mℓ /day for 21 days (4.1 million m^3).

The following options were identified for providing improved assurance of supply to the WTW by various means, including balancing storage:

1. Balancing storage on the right bank of the Sundays River near the Nooitgedagt Water Treatment Works (Nooitgedagt WTW) in combination with a raised Scheepersvlakte Balancing Dam wall.

2. Diverting water from the existing Korhaansdrift Weir via a right bank pipeline to Nooitgedagt WTW for additional delivery of the NMBM's water allocation.

3. Increased balancing capacity at the Korhaansdrift Weir and diverting water via a right bank pipeline to Nooitgedagt WTW for full delivery of the NMBM's water allocation.

4. Releasing water from the existing Korhaansdrift Weir and diverting it closer to the Nooitgedagt WTW via a new pump station for full delivery of the NMBM's water allocation.

5. Increased balancing capacity at the Korhaansdrift Weir, with water releases to a new pump station downstream in the Sundays River, close to the Nooitgedagt WTW.

6. Constructing a larger dam near the present Scheepersvlakte Balancing Dam site and integrating this dam with the existing gravity pipeline to the Nooitgedagt WTW.

7. Constructing a large balancing dam on the right bank near the Nooitgedagt WTW.

Table 10 outlines the various alternative types that must be assessed for each development**.** The extent of the applicability of each of these is further presented. It must be highlighted that the alternatives presented in the table are derived from both the the EIA Regulations (2017) as amended as well as the the Department of Environmental Affairs and Tourism's (now Department of Forestry, Fisheries and the Environment) 2004 Integrated Environmental Information Series on the Criteria for determining alternatives in EIA. Where the alternative is applicable to the project, it will be further discussed in this DSR. The alternatives discussed in this DSR are as follows.

- The No-Go Option;
- Activity alternatives;
- Property alternatives;
- Process alternatives;
- Operational alternatives; and
- Demand alternatives.

The brief background behind the discussion of these alternatives and the exclusion of others is presented in **Table 10.**

Table 10: Project alternatives types (DFFE IEM Series 11)

ALTERNATIVE	COMMENT
No-go Option	The 'no-go' alternative is sometimes referred to as the 'no-action' alternative (Glasson *et al.,* 1999) and at other times the 'zero-alternative'. It assumes that the activity does not go ahead, implying a continuation of the current situation or the status quo. This alternative must be discussed on all projects as it allows for an assessment of impacts should the activity not be undertaken. **This alternative is discussed in this report.**
Activity alternatives	These are sometimes referred to as project alternatives, although the term activity can be used in a broad sense to embrace policies, plans and programmes as well as projects. Consideration of such alternatives requires a change in the nature of the proposed activity. This would entail a process where a different project is proposed over the Lower Coerney Dam. **There is one activity alternative to the proposed Lower Coerney Balancing Dam which is discussed in this report.**
Location/ property alternatives	Location alternatives could be considered for the entire proposal or for a component of a proposal, for example the location of a processing plant. The latter is sometimes considered under site layout alternatives. A distinction should also be drawn between alternative locations that are geographically quite separate, and alternative locations that are in close proximity. In the case of the latter, alternative locations in the same geographic area are often referred to as alternative sites. Based on the prefeasibility studies by DWS, three (3) alternative dam locations were assessed near Scheepersvlakte Dam and four (4) possible sites for a balancing dam near the Nooitgedagt WTW were evaluated. **Based on the above, the location/property alternatives will be discussed in this report.**
Process alternatives	Various terms are used for this category, including technological alternative and equipment alternative. The purpose of considering such alternatives is to include the option of achieving the same goal by using a different method or process. An industrial process could be changed, or an alternative technology could be used. These are also known as technological and equipment alternative and will be discussed as they are applicable to the type of pipeline which will be used, and the removal of vegetation required. **These will be discussed in this report.**
Demand alternatives	Demand alternatives arise when a demand for a certain product or service can be met by some alternative means. This is applicable to the demand for a product or service. An example of this would be where there is a need to provide more drinking water. Examples of alternatives can be through managing demand through various methods or providing additional drinking water. Specific to the proposed project, alternatives regarding the demand for irrigation and potable water (emergency

ALTERNATIVE	COMMENT
	supply) will be discussed. These are linked exclusively to the volume (dam capacity). **These will be discussed in this report.**
Scheduling alternatives	These are sometimes known as sequencing or phasing alternatives. In this case an activity may comprise several components, which can be scheduled in a different order or at different times and as such produce different impacts. **These are not applicable to the project and will not be discussed.**
Input alternatives	By their nature, input alternatives are most applicable to industrial applications that may use different raw materials or energy sources in their processes. **Considering that the proposed development is a dam, input alternatives are not applicable to the project.**
Routing alternatives	Consideration of alternative routes generally applies to linear developments such as power lines, transport, and pipeline routes. The proposed project is a dam and will link to existing canals. **Therefore, routine alternatives are not applicable to this development.**
Site layout alternatives	Site layout alternatives permit consideration of different spatial configurations of an activity on a particular site. This may include particular components of a proposed development or may include the entire activity. Based on aim of the project on achieving maximum water capacity, one suitable layout has been proposed for the dam. **Based on this, site layout alternatives will not be covered in this report.**
Scale alternatives	In some cases, activities that can be broken down into smaller units can be undertaken on different scales. For example, a housing development within an overall mixed-used development could have the option of 1 000, 2 000 or 4 000 housing units. Each of these scale alternatives may have different impacts. However, the proposed dam cannot be broken down into smaller units. **For this reason, scale alternatives will not be discussed in this report.**
Design alternatives.	This entails the consideration of different designs for aesthetic purposes or different construction materials to optimise local benefits and sustainability would constitute design alternatives. Appropriate applications of design alternatives are communication towers. In such cases, all designs are assumed to have different impacts. Generally, the design alternatives could be incorporated into the project proposal and so be part of the project description and need not be evaluated as separate alternatives. **Based on project description and background information, no design alternatives were available and will therefore not be discussed in this DSR**.

ALTERNATIVE	COMMENT
Operational alternatives	The Operational Alternative is where you can specify controls on the operational aspects of the project such as pressure pipes, pumps, as well as valves. **Based on project description and background information, operational alternatives are applicable to the project and will be assessed in this report.**

6.1 Activity alternative

a. Improvements at Scheepersvlakte Dam

The DWS study undertaken by Naidu Consulting identified the following improvements that should be made at Scheepersvlakte Dam:

- Install an isolating valve and a non-return valve on the 1420 mm Nooitgedagt pipeline to prevent backflow from the cross-connection to the Scheepersvlakte Syphon.
- Modify the dam's outlet works, to enable future maintenance and repairs to be undertaken without requiring 3-day shutdowns and draining of the dam.
- Construct a direct connection between the Nooitgedagt pipeline and the main canal, to replace the existing Syphon and separate the operation of the Nooitgedagt pipeline from the operation of the Upper Coerney Canal.

The first option above would probably require that Scheepersvlakte Dam is taken out of service for a few days and the second option would require a considerable time. The last option could probably be undertaken by taking the Scheepersvlakte Dam out of service for a relatively short period of time. After implementation, this option would enable the Nooitgedagt WTW to be supplied directly from the canal for up to 4.5 days per week, while Scheepersvlakte Dam is taken out of service, or for longer if the canal is not emptied each weekend during the period that maintenance work is undertaken on Scheepersvlakte Dam. The provision of a direct offtake from the canal would provide the additional benefit that the deposition of silt in Scheepersvlakte Dam would probably be considerably reduced as the volume of sediment laden water that would flow through the reservoir would be reduced.

However, after careful analysis it was found that this option is not recommended. The main reason for the current operation of the canals for 4.5 days per week is because the canals have sufficient capacity to supply the full current allocation during this period and because of the additional costs and potential staffing problems that would arise if the canals were to be operated for 7 days per week. The filamentous algae which occur are reduced by drying out the canals for two days per week and only occasionally occur. These algae result in increased maintenance (cleaning) of the canal and could affect the operation of the Nooitgedagt WTW. In addition, it was suggested by DWS that if the balancing storage is sited near Scheepersvlakte Dam, then it would also be necessary to reduce the

risk of failure of the pipeline from there to the Nooitgedagt WTW (1 400 mm x 9 300 m long steel pipeline). Duplication of the existing pipeline would probably rule out all options for balancing dams in the vicinity of Scheepersvlakte Dam because of the very high additional cost of approximately R240 million.

b. Raising of Scheepersvlakte Dam

If Scheepersvlakte Dam would be raised sufficiently to provide 21 days of balancing storage, then the dam wall would have to be raised by about 12 m to provide about 4.6 million m3 of balancing storage for an emergency supply of about 220 Mℓ /day (210 Mℓ /day plus 3% losses). Therefore, the full supply level would have to be raised from 104.6 m to about 117 m. The raising of Scheepersvlakte Dam is, however, not feasible as the site is not suitable for raising the dam and spillway by the required 12 m. If the site was suitable, the raised dam would require that most of the stored water would have to be pumped due to the lower level of the long weir in the canal that supplies Scheepersvlakte Dam. The crest level of this weir is at RL 105.8 m, which is 11 m below the raised full supply level.

c. Development of a new 21 day emergency supply balancing dam

This option is based on the construction of a dam near Scheepersvlakte Dam or Nooitgedagt WTW. A balancing storage of 21 days average daily demand (ADD) is recommended to limit the risk of shortfall in supply to the NMBM. Thus, the requirement of the development of a new dam with the design water requirement for NMBM of 76.6 million m^3/a or 210Ml/day. The main advantage of the chosen dam site is that it would be operated under gravity (no pumping will be required). Other advantages is that the new dam will consist of new infrastructure which will have a longer operational period and minimal (cost reduction) maintenance requirements.

6.2 Location/ property alternatives

Three possible sites for a balancing dam near the Scheepersvlakte Dam were evaluated (**Figure 21**), namely:

1. Upper Scheepersvlakte Dam site;
2. **Lower Coerney Dam site**; and
3. Upper Coerney Dam site.

Additional four possible sites for a balancing dam near the Nooitgedagt WTW were evaluated (**Figure 21**), namely:

1. Nooitgedagt North Option 1 site;
2. Nooitgedagt North Option 2 site;
3. Nooitgedagt North Option 3 site; and

4. Nooitgedagt South site.

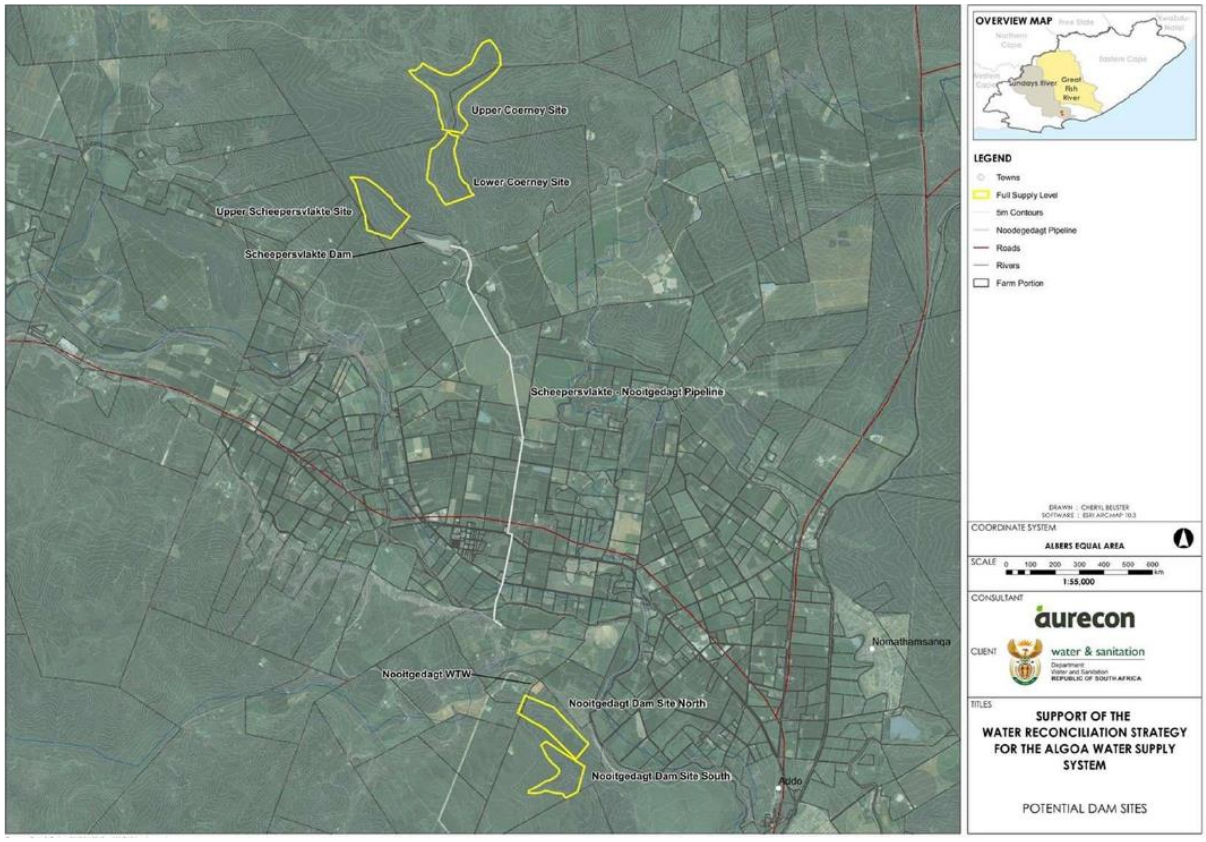


Figure 21: Options for Balancing Dams near Scheepersvlakte Dam and Nooitgedagt WTW (DWS, 2019)

The alternatives as described by DWS in the Options Analysis Report dated February 2019 are discussed as follows. An Environmental Constraints Analysis was undertaken to provide a desktop overview and analysis of the environmental sensitivity of the short-listed sites for a new balancing dam, highlighting potential issues and constraints and outlining the requisite environmental legal compliance requirements for each option. This provided high-level input regarding the environmental issues / constraints and legal requirements of the five short-listed sub-options. From a terrestrial ecology perspective, the Upper Scheepersvlakte and Coerney sites were considered slightly more environmentally sensitive when compared to the Nooitgedagt sites, mostly due to an overlap with an Endangered Ecosystem. From an aquatic ecology perspective, the Coerney sites have a greater aquatic sensitivity due to the drainage line within which they are located. No fatal flaws were identified from a heritage and palaeontology as well as land use perspective. From a purely environmental sensitivity perspective, the Nooitgedagt sites were slightly preferred to the Upper Scheepersvlakte and Coerney sites. The aforementioned do not however qualify as “fatal flaws”, but merely something to take note of when evaluating the overall feasibility of the sites.

6.2.1 Scheepersvlakte Dam Sites

a. Upper Scheepersvlakte Dam

The Upper Scheepersvlakte Dam would be sited immediately upstream of the existing Scheepersvlakte Dam on Scheepersvlakte 98 Portion Number 7, as shown in **Figure 21**. This property is currently owned by Scheepersvlakte Farms, which is currently developing the property for irrigated agriculture. The Scheepersvlakte 98 Citrus Development Trust plans to establish approximately 60 ha orchards in the area that would be occupied by the proposed dam wall and would be inundated by the reservoir basin.

The main features of the dam include:

- The full supply level of the proposed dam would be at 128 masl to provide a capacity of 4.6 million m^3. The lowest drawdown level would be at about 115 masl.
- The storage in the dam would only be utilized in an emergency and therefore over 50 years only about 4 000 m^3 of sediment from the catchment would be deposited in the dam.
- The reservoir footprint would be about 60 ha.
- The dam would have a catchment area of 3.5 km^2 and although the safety evaluation flood would be about 220 m^3/s, this could be accommodated by a relatively small 10 m wide side channel spillway, with 2.5 m of freeboard that would provide significant flood attenuation.
- As the existing nearby Scheepersvlakte Dam is an embankment dam it is likely that suitable earthfill materials would be available in the vicinity to construct a zoned earthfill embankment dam with 1 in 3 upstream slope and 1 in 2 downstream slope, with cobblecrete upstream slope protection.

The main advantages of the dam would be as follows:

- The dam would be situated very close to the existing Scheepersvlakte Dam and associated conveyance infrastructure.
- The catchment area of the dam is small (3.5 km^2) and therefore a smaller spillway and less freeboard will be required.

The disadvantages of the dam would be as follows:

- All the water stored in the dam would have to be pumped from the canal, which would be an additional operational cost.
- The dam would be situated on private property to be developed as orchards by Scheepersvlakte Farms.
- The developer may wish to share the use of the dam, which might complicate its operation.
- The pump station would be remote from the Nooitgedagt WTW and would have to be operated and maintained.

- The existing pipeline from Scheepersvlakte Dam to Nooitgedagt WTW may be vulnerable to damage by a major flood, although the risk would be significantly reduced by the proposed provision of a second Syphon crossing, as included in the estimate of the cost.

b. Lower Coerney Dam

The proposed Lower Coerney Dam (**Figure 21**) would be sited upstream of the Coerney Syphon on Scheepersvlakte 98 Portion Number 7 of Scheepersvlakte Farms Pty Ltd in the vicinity of the site proposed by Scheepersvlakte Farms for a balancing dam. The main advantage of the scheme is that it would provide a gravity supply to the WTW via the existing 1 400 mm Nooitgedagt pipeline, and it would also be filled by gravity flow via the proposed pipeline from the canal. The main characteristics of the proposed dam are indicated in **Table 11**.

Table 11: Main characteristics of the proposed Lower Coerney Dam (DWS, 2019)

Characteristic	Lower Coerney Dam
Type of dam	Zoned earthfill embankment
NOC (m amsl)	103.8
FSL (m amsl)	98.8
Freeboard (m)	5.0
Crest width (m)	5.0
DS Slope (1V:H)	2.0
US Slope (1V:H)	3.0
Embankment fill volume (m^3)	355,993
Core trench volume (m^3)	46,798
Crest length (m)	623
Total gross dam capacity (m^3)	4,600,000
Surface area at FSL (ha)	59.7
Maximum wall height (m)	19.0
Catchment area (km^2)	34
Unrouted SEF (m^3/s)	890
Spillway configuration description	Concrete-lined, 36 m wide, side channel spillway located on the left abutment. (Note: spillway position dependent on geotechnical conditions) with downstream concrete outlet chamber, 4x4x3m, with two valves for the two pipelines.
Outlet works description	Dry well tower (19m high) with inside dimensions of 4x4m. Three offtake levels controlled by valves.
Access road length (km)	1.0

The main advantages of the scheme would be as follows:

- The dam would be situated close to Scheepersvlakte Dam and associated conveyance infrastructure.

- The scheme would be a gravity supply to fill the dam and to deliver water to Nooitgedagt WTW (no pumping required).
- The comparative capital cost as well as the cost of operation for this option is the lowest of the five options investigated.
- The irrigation water that passes through the dam would probably be sufficient to maintain acceptable salinity for urban consumption, but may need to be managed to ensure that the quality would be acceptable for citrus.
- No electricity costs would be incurred if water needs to be abstracted and replaced to maintain acceptable salinity levels.

The possible disadvantages of the scheme would be as follows:

- The dam would be situated at the outlet of a relatively large catchment area (34 km^2) and a major flood could cause damage downstream of the spillway as there is no evidence of rock at the site.
- The reserve storage and infrastructure would be remote from Nooitgedagt WTW and an additional Syphon under the Sundays River would be required to reduce the risk of wash away of the existing 1 400 mm Syphon.
- The potential joint use of the dam's water by the Municipality and the private developer would need careful planning.

c. Upper Coerney Site

The Upper Coerney dam site is situated about 1.5 km upstream of the Lower Coerney Dam site and approximately 2.3 km upstream of the Coerney Syphon. The dam and its reservoir basin would extend across two privately owned properties: Enon Mission Station 40-0, which is owned by Enon Mission, and Uitenhage Road 713-0, which is owned by the Venter Wildlife Trust. The main features of the dam are described below:

- There is no geotechnical information available concerning materials in the reservoir basin, and therefore for this very preliminary assessment it has been assumed that the dam wall would comprise a zoned earth embankment, as suggested for the costing of the Lower Coerney Dam.
- The full supply level of the proposed dam would be at about 109.1 masl and the lowest drawdown level at about 95 masl to provide a capacity of 4.6 million m^3 for 21 days emergency supply. Pumping would be required to fill the dam.
- The proposed dam would have a catchment area of 30 km^2. Assuming a sediment load of 15 m3/km^2/annum, then about 23 000 m^3 of sediment from the catchment area would be deposited over a 50-year period.

- The safety evaluation flood for the 30 km^2 catchment area of approximately 820 m^3/s, would be attenuated to about 700 m^3/s by the reservoir. As there does not appear to be any rock at the site, it has been assumed that a concrete lined side channel spillway with a 32 m crest width and 5 m of freeboard would be provided.

The main advantages of the scheme would be as follows:

- The dam would provide a gravity supply to deliver water in an emergency to Nooitgedagt WTW.
- The dam would be situated relatively close to the Scheepersvlakte Dam and associated conveyance infrastructure.

The possible disadvantages of the scheme would be as follows:

- The dam would be situated at the outlet of a relatively large catchment area (30 km^2) and a major flood could cause damage downstream of the spillway, as there is no evidence of rock at the site.
- Water would have to be pumped into the dam.
- The reserve storage and infrastructure would be remote from Nooitgedagt WTW and an additional Syphon under the Sundays River would be required to reduce the risk of failure of the system.
- The dam and reservoir basin would extend across two properties.
- This option has the highest comparative capital cost of the three options investigated in the vicinity of Scheepersvlakte Dam. The Upper Coerney Dam does not offer any real advantage over the other two options.

6.2.2 Alternative Nooitgedagt Dam Sites

Four possible sites for a balancing dam near the Nooitgedagt WTW were identified and assessed. The main advantages of these sites would be as follows:

- The balancing dam would be located very close to the Nooitgedagt WTW and therefore could be easily managed by the operating staff at the Works.
- The supply would not be vulnerable to a failure of the Scheepersvlakte to Nooitgedagt pipeline.

Four possible sites for a balancing dam, to provide 21 days of storage, were assessed. All the sites would be situated on Erf 119 Portion 1, which is owned by Rolust Sondagsrivierplase CC, according to Windeed (but may currently be owned by Wicklow Trust). This property is currently utilised as a game reserve; however, the owners have indicated that they are planning to develop some of the area for

irrigation (DWS, 2019). They will be requesting the LSRWUA to approve the relocation of the point of abstraction of their existing water allocation, from the 1 420 mm pipeline to the vicinity of the Nooitgedagt WTW. Wicklow Trust has also advised in their letter dated the 12th of October 2017 that the construction of a dam at the Nooitgedagt North Option 1 site would not be acceptable and that only the Nooitgedagt South site would be acceptable (DWS, 2019).

a. Nooitgedagt North Option 1

The location of the proposed Nooitgedagt North Option 1 dam is shown in **Figure 21**. The dam would be located close to three 11 kV/ 22 kV transmission lines and close to the main 400 kV transmission line, which supplies power to NMBM. The limited geotechnical inspection of the site indicated that suitable material would probably be available for the construction of a cut to fill dam. The dam would have virtually no catchment area, other than the reservoir basin, and therefore only a nominal overflow channel, which would discharge into the adjacent valley, would be provided. This dam was assumed to be like that of the proposed Upper Scheepersvlakte Dam.

The main advantages of the scheme would be as follows:

- The dam would provide a gravity supply to deliver water in an emergency to Nooitgedagt WTW.
- The dam would be situated very close to the Nooitgedagt WTW and the pump station would be situated at the WTW site, which would facilitate maintenance and operation.
- This scheme has a lower risk of failure than those in the vicinity of Scheepersvlakte Dam as water is not supplied via a long pipeline and Syphon.
- The dam would have virtually no catchment area and therefore only a small unlined spillway channel and limited freeboard would be required.

The possible disadvantages of the scheme would be as follows:

- The embankment volume to capacity ratio is relatively high and accounts for the relatively high cost, which is more than the most expensive option in the vicinity of Scheepersvlakte Dam. This cost could, however, potentially be slightly reduced.
- The 2 m of freeboard provided is conservative and other refinements may be possible.
- Water would have to be pumped into the dam.
- The property owner has advised that this proposed site for the dam is not acceptable due to possible seepage water affecting downstream orchards. Lining of the dam may therefore be required, depending on the soil permeability, which will further increase the capital cost.

b. Nooitgedagt North Option 2

The location of the proposed Nooitgedagt North Option 2 dam is shown in **Figure 21**. The dam would require the relocation of three 11 kV/ 22 kV transmission lines and probably also the main 400 kV transmission line, which supplies power to NMBM. The main features of the dam would be similar to those for the Nooitgedagt North Option 1 and Upper Scheepersvlakte Dam, as described in Section 6.2.a.

The advantages and disadvantages of Nooitgedagt North Option 2 would be similar to those for Nooitgedagt North Option 1, as described earlier, but the dam would also have the following additional disadvantages:

- The 11/22 kV transmission lines and possibly also the 400 kV transmission line would have to be relocated.
- The capital cost would be significantly higher than that for Nooitgedagt North Option 1.

c. Nooitgedagt North Option 3

The main features of the dam would be similar to those for Nooitgedagt North Option 1. The advantages and disadvantages of Nooitgedagt North Option 3 would be similar to those for Nooitgedagt North Option 1, but the dam would also have the following additional disadvantage:

- The capital cost would be significantly higher than that for Nooitgedagt North Option 1.

d. Nooitgedagt South

The site of the proposed Nooitgedagt South Dam is shown in **Figure 21**. The embankment dam would be located upstream of the 400 kV transmission line so that the line would not be impacted on by the dam. This site is not optimal for the dam, resulting in high construction cost. The main features of the dam would be similar to those for the Nooitgedagt North Option 1 and Upper Scheepersvlakte Dam, as described in Section 6.2.a.

The main advantages of the dam would be that water could gravitate into the dam, and it is the favored site for the landowner, the Wicklow Trust. The main disadvantages would be as follows:

- Water would have to be pumped to the Nooitgedagt WTW.
- The capital cost of the dam would be high. This in part arises from the siting of the dam so that construction would not take place below the 400 kV transmission line and the need for a relatively high dam wall, which would provide a relatively small reservoir basin.

6.3 Process alternatives

a. *Option 1: Balancing storage on the right bank of the Sundays River near Nooitgedagt WTW in combination with a raised Scheepersvlakte Balancing Dam wall*

This option consists of off-channel balancing storage consisting of a small dam in the valley to the north-west of the Nooitgedagt WTW in combination with an on-site storage facility, which could fit inside the present Nooitgedagt WTW site boundaries. The total storage available is limited due to the lack of available land on the Nooitgedagt WTW site (about 150 Mℓ storage in a cut-to-fill dam) and a possible 250 to 300 Mℓ in the valley surrounded by developed irrigation farmland. Raising of the Scheepersvlakte Balancing Dam by 1.0 to 1.5m could add some 160 Mℓ storage to achieve some 850 Mℓ storage. The maximum combined effective storage is estimated at 1000 to 1100 Mℓ, which may offer some 6 to 7 times the average daily demand (ADD) storage. This option thus cannot meet the required balancing storage.

b. *Option 2: Diverting water from the existing Korhaansdrift Weir via a right-bank pipeline to Nooitgedagt WTW*

The balancing capacity of the Korhaansdrift Weir is roughly estimated at 100 to 120 Mℓ, of which 80% would be utilized for this option. The proposed pipe route will initially start on the left bank (due to steep rocky slopes on the right bank) and then cross over to the right bank at 1.5 km downstream. The new pipeline will be 36 km long and will tie into the existing 1.5 m diameter pipeline from the Scheepersvlakte Balancing Dam to the Nooitgedagt WTW.

c. *Option 3: Increased balancing capacity at Korhaansdrift Weir and diverting the water via a right-bank pipeline to Nooitgedagt WTW*

The operation of this option is similar to Option 2, but additional balancing capacity will be created at Korhaansdrift Weir to accommodate the variability in the NMBM's water requirements and to minimize possible spillages under the LSRWUA long distance releases from Darlington Dam. This option requires that the Korhaansdrift Weir be raised by 4.5 m to create additional balancing capacity of 1 050 Mℓ. Given the age and history of the existing wall, raising the wall will require a new structure with the existing wall at best being used as a "shutter" to part of the new wall structure. The gravity pipeline will be 36 km long with a 1.5 m diameter.

d. *Option 4: Releasing water from the existing Korhaansdrift Weir into the river and diverting closer to the Nooitgedagt WTW via a new pump station*

This option is based on operating the existing Korhaansdrift Weir at present capacity, but to install a new outlet valve(s) in the present structure to allow for immediate releases on a short-term basis. At a distance, some 44 km downstream of Korhaansdrift Weir, a large "hippo pool" was identified in the Sundays River as a good point of abstraction for a proposed right bank raw water pump station. From

the proposed pump station, a 1.4 m diameter pipeline will be tied into the existing 1.4 m diameter gravity pipeline from the Scheepersvlakte Balancing Dam.

The pump station will require an in-stream structure to maintain the present operating levels in the pool. Any permanent structure constructed above present "dry season" levels, will pose a flooding risk to adjacent irrigation land. The proposed structure would therefore be mass concrete or gabions, but not extend above the present water level. Total dissolved solids (TDS) levels at the proposed pump station could vary between 1 190 and 1 600 mg/ℓ.

e. Option 5: Increased balancing capacity at the Korhaansdrift Weir with releases to a new Pump Station downstream in the Sundays River

The operation of this option is similar to Option 4, but additional balancing capacity will be created at Korhaansdrift Weir to accommodate the variability in the water demands of NMBM and to minimize possible spillages under the LSRWUA long-distance releases from Darlington Dam. This option requires (as for Option 3) that the Korhaansdrift Weir be raised by 4.5 m to create additional balancing capacity of 1 050 Mℓ. Given the age and history of the existing wall, raising of the wall will require a new structure with the existing wall at best being used as a "shutter" to part of the new wall structure.

As per Option 4, a downstream pump station will be required to abstract raw water from the "hippo pool" with level protection in the form of a low weir structure. From the proposed pump station, a 1.4 m diameter pipeline will be tied into the existing 1.4 m diameter gravity pipeline from the Scheepersvlakte Balancing Dam. The deterioration of water quality due to irrigation/return seepage/flows between the Korhaansdrift Weir and the proposed pump station, and the high risk of water losses over the abstraction weir, are real concerns for this option as well.

f. Option 6: A larger dam near the present Scheepersvlakte Balancing Dam to be integrated with the existing gravity pipeline to Nooitgedagt WTW

This option is based on the construction of a dam in the valley north-east of the existing Scheepersvlakte Balancing Dam, as shown in **Figure 22**. Water will be abstracted just upstream of the last long weir in the main canal, but downstream of the Coerney syphon offtake. The supply pipeline between this main canal abstraction point and the proposed dam will be a 1.4 m diameter x 880 m long steel pipe. The gravity supply, between the dam and the existing gravity pipeline to the Nooitgedagt WTW, will be a 1.4 m diameter x 730 m long steel pipeline. The site falls largely on land being planned for development by the Scheepersvlakte 98 Citrus Development Trust (Scheepersvlakte Farms (Pty) Ltd (SVPL)).

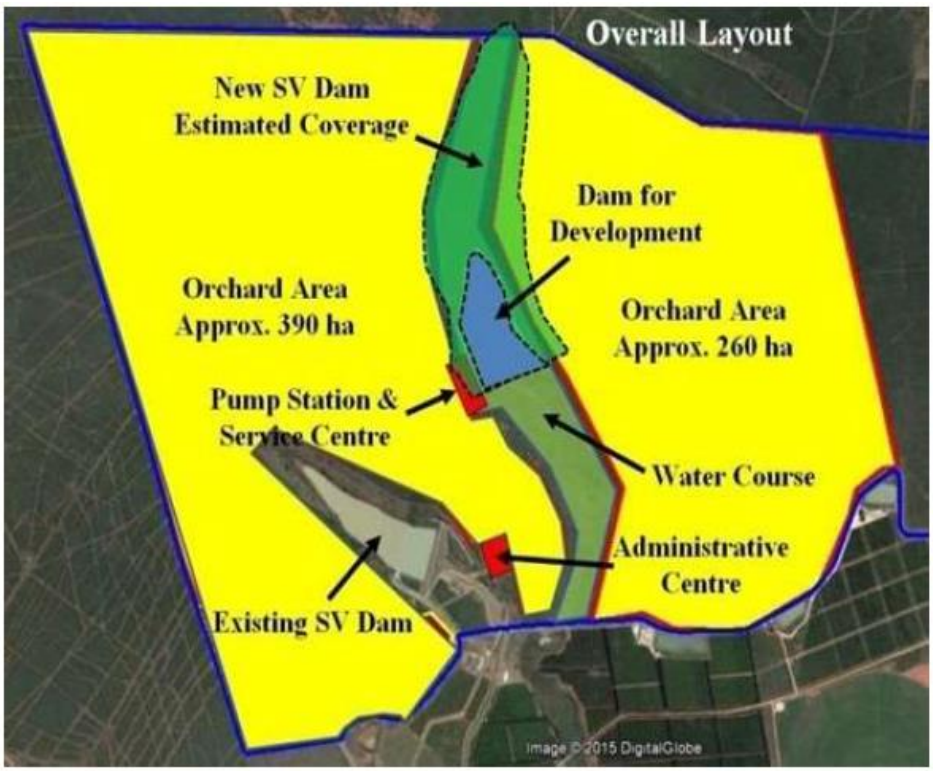


Figure 22: Scheepersvlakte 98 Citrus Development (DWS, 2019)

The Scheepersvlakte 98 Citrus Development Trust is currently constructing a small dam on the same site as that identified for the Coerney Balancing Dam. According to DWS (2019), a meeting was held with the Trustees and Engineers of the Trust in May 2016. The Trust agreed to co-operate with the DWS evaluation and possible future works, should this new dam option be pursued further. The Scheepersvlakte 98 Citrus Development has received a water use authorisation from the DWS for the abstraction of a maximum of 5 850 000 m^3/a, for the development of 650 ha of citrus. The Scheepersvlakte 98 Citrus Development Trust received their Environmental Impact Assessment for their development from the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism (DEDEA) in August 2019.

g. Option 7: A large balancing dam on the right bank near the Nooitgedagt WTW

This option considered the possibility of providing additional storage near the Nooitgedagt WTW, which would have the following advantages:

- The storage would enable the works to continue to operate for a reasonable period while maintenance or repairs are done on the damaged components of the upstream sections of the supply system (all components are upstream).
- The proposed dam would supply the Nooitgedagt WTW by gravity, although it may be necessary to pump water into the dam.
- All future peak demands on the Nooitgedagt WTW could be supplied by gravity.

The existing 1.4 m diameter steel pipeline delivers water to a balancing tank located above the works at about related level (RL) 85 m. It may be possible to fill the dam by gravity when the Scheepersvlakte Balancing Dam is at or near full capacity. With the proposed full supply level (FSL) at RL 88 m and the Scheepersvlakte Balancing Dam at lower levels, a booster pump station will be required near the northern boundary of the Nooitgedagt WTW site.

It is proposed that water should be supplied at one end of the proposed dam and abstracted from the other end to provide circulation and minimize the risk of algal growth. On the other hand, wind and wave action is likely to cause circulation within the water body and therefore it seems unlikely that there would be any significant benefit in separating the inlet and outlet. However, it would probably be desirable to provide a multi-level abstraction tower. A very small spillway would suffice. The electricity transmission line serving farms to the south-east of the Nooitgedagt WTW would have to be relocated for this option.

A Risk Matrix was compiled based on desktop conditions and site assessments to determine the feasibility of the above-mentioned options. **Table 12** is a Risk Matrix compiled for the seven options under consideration and is based on the discussions above. Options 1 to 5 have high risks for the continuity of water supply, either during construction or during operation. The direct and indirect costs associated with the risk of interruptions in water supply for both urban and agricultural water users, have ruled these five options out for more detailed investigations and evaluation.

Table 12: Risk Matrix for Preliminary Screening of Options (DWS, 2019)

Criteria Applied	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Risk to supply during Construction	Low	Medium	High	Medium	High	Low	Low
Risk to NMBM during Operation	High	High	Medium	High	Medium	Low	Low
Operational risks for LSRWUA	High	High	Medium	High	Medium	Low	Low
Capital and Operational costs	Low	High	High	Low	Low	High	Medium
Environmental risks costs	Low	Medium	Medium	Low	Low	Medium	Medium
Water quality deterioration in operation	Low	Low	Low	High	High	Low	Low

6.4 Demand alternatives

a. Option 1: A smaller balancing dam near the present Scheepersvlakte Balancing Dam

The proposed dam is a Homogeneous Earth fill Embankment Dam (gravity), with a storage capacity of approximately 4.69 million m^3, which will be supplied by the Kirkwood Primary Canal via a new pipeline. A smaller balancing dam would entail a development of a dam with a smaller capacity (less than 4.69 million m^3), which would have the following advantages:

- Reduced development footprint which requires lesser vegetation clearance;

- Minimal environmental impacts; and
- Reduced risk of dam integrity and structural failure or dam collapse due to reduced stress on the dam wall.

Regardless of the positive environmental aspects of this alternative, the smaller balancing dam option is not viable as this would entail a situation where the water shortages and required emergency water supply issues are not addressed and additional dams would still be required.

b. Option 2: A suitable balancing dam near the present Scheepersvlakte Balancing Dam

This option comprises of the proposed suitable balancing dam with water capacity of approximately 4.69 million m^3 to will be supplied by the Kirkwood Primary Canal via a new pipeline. The dam will require approximately 74ha of land to accommodate the desired water volume. The main advantages of this dam would be as follows:

- Although the dam footprint will be considerably big, the dam would be a gravity supply to fill the dam and to deliver water to Nooitgedagt WTW (no pumping required).
- The irrigation water that passes through the dam would probably be sufficient to maintain acceptable salinity for urban consumption, but may need to be managed to ensure that the quality would be acceptable for citrus; and
- The dam will cater for the citrus irrigation as well as provide emergency supply to NMBM for the required three weeks supply.

The possible disadvantages of the dam would be as follows:

- The larger dam has a high flood risk that could cause damage downstream of the spillway as there is no evidence of rock at the site; and
- The increased development footprint requires more vegetation clearance and has more environmental impacts;

This option is more viable as it caters for the farmers, the NMBM and has provision for sustainability.

c. Option 3: A bigger balancing dam near the present Scheepersvlakte Balancing Dam

This option comprises of a bigger balancing dam with water capacity beyond 4.69 million m^3 to will be supplied by the Kirkwood Primary Canal via a new pipeline. The dam will require more than 74ha of land to accommodate the additional water volume. The main advantages of this dam would be as follows:

- Although the dam footprint will be considerably big, the dam would be a gravity supply to fill the dam and to deliver water to Nooitgedagt WTW (no pumping required).

- The irrigation water that passes through the dam would more than sufficient to maintain acceptable salinity for urban consumption, but would need to be managed to ensure that the quality would be acceptable for citrus; and
- The dam would cater for the citrus irrigation as well as provide emergency supply to NMBM for more than the required three weeks supply.

The possible disadvantages of the dam would be as follows:

- The larger dam would be a major high flood risk that could likely cause damage downstream of the spillway as there is no evidence of rock at the site; and
- The extended development footprint would require an extensive vegetation clearance and would result is severe environmental impacts.

Regardless of the positive capacity aspects of this alternative, the bigger balancing dam option is not viable as this would entail a situation where the dam and structural integrity would be significantly compromised and more likely to have a situation where the dam wall collapses.

6.5 Operational alternatives

The balancing dam would not be operated in the same way as normal water resource infrastructure as the water in the dam would only be abstracted in an emergency to supply the Nooitgedagt WTW. The dam would be filled over a certain filling period and would be topped up from time to time to make up evaporation and seepage losses, and possibly also operated to address water quality considerations. Because of this operation, the capital cost is more appropriate for comparing schemes rather than the unit reference value (URV). Refer to **Table 13** for the detailed prefeasibility comparison of the balancing dam options.

Table 13: Prefeasibility comparison of the balancing dam options (DWS, 2019)

	Potential Dam Sites				
EVALUATION FACTOR	**Upper Scheepersvlakte**	**Lower Scheepersvlakte**	**Upper Coerney**	**Nooitgedagt North – Option 1**	**Nooitgedagt South**
Capital Cost (R Million)	349	237	375	457	654
Capital Cost (cost of pumps reduced by 50%) (R Million)	282	231	309	403	600
Cost	2 – 2nd Lowest	1 - Lowest	3 – 3rd Lowest	4 - High	5 – Vey High
Pumping Required	**X**		**X**	**X**	**X**

Operational Complexity	**X**	**X**			
Strategic Location near WTW				**X**	**X**
Ecological considerations (Reserve)		**X** but likely easy to address	**X** but likely easy to address		
Considerations of floods					
Environmental & Social Impacts	Limited differentiation	Limited differentiation	Limited differentiation	Limited differentiation	Limited differentiation

Based on the capital cost comparison as well as other considerations, the Nooitgedagt Dam sites were not recommended for feasibility assessments, because of their significantly higher costs and landowner objections. Nevertheless, the Nooitgedagt sites would provide a strategic advantage when compared with the Upper Scheepersvlakte and Coerney dam sites due to their proximity to the Nooitgedagt WTW. On the other hand, the main risk of failure of the Upper Scheepersvlakte and Coerney dam options would be mitigated by providing an additional syphon through the Sundays River, as well as managing the process to enable quick replacement of damaged pipes, should this be required.

6.6 The No-Go Option

The no-development alternative would entail continuing with the *status quo*, i.e., a situation where the proposed Lower Coerney Balancing Dam will not be developed. The No Go Alternative will be considered in the EIA in accordance with the requirements of the EIA regulations, 2014, (as amended) However, this option is not viable as this would entail a situation where the water shortages and required emergency water supply issues are not addressed and additional dams would still be required.

7 PUBLIC PARTICIPATION PROCESS

The NEMA (1998) EIA Regulations, 2014, as amended, prescribe that the Environmental Impact Assessment process must include the undertaking of public participation in accordance with the Chapter 6 of the Regulations. The purpose of the Public Participation Process (PPP) is to provide all potential and / or registered Interested and Affected Parties (I&APs), including the competent authority and any other stakeholder or organ of state, an opportunity to become involved in the EIA process and provide comments during the various phases of the project. Involvement by I&APs is critical, as it contributes to a better understanding of the proposed project among I&APs, raises important issues that need to be assessed and provides local insight that will enhance the EIA process.

This chapter of the report provides details on the Public Participation Process followed during the initial public participation and that for the Draft Scoping Phase for the proposed Lower Coerney Balancing Dam.

7.1 Identification of Interested and Affected Parties

Interested and Affected Parties (I&APs) were identified through various means from the inception phase of the project. These means included the placement of an advertisement in a local newspaper, the placement of Site Notices and the distribution of Notification Letters. Each of these are discussed below.

- Initial site visit and engagement with the Scheepersvlakte Farm Representatives, the Lower Sundays River Water Users Association (LSRWUA) and Die Kooperasie Farm Development;
- A newspaper advertisement was placed on page 6 of the 30th of November 2021 edition of The Herald Newspaper distributed within the Port Elizabeth Region.
- On-site notices presenting the project were erected within the site, local shops, LSRWUA Irrigation Board, Municipal Library, along public roads, and areas visible to the public on the 30th of November and 1st of December 2021; and
- Notification letters were compiled and distributed to adjacent landowners and Kirkwood residential area on the 30th of November and 1st of December 2021.

7.2 Newspaper Advertisement

Regulation 41(2)(c) and (d) of the NEMA (1998) EIA Regulations, 2014, as amended requires that PPP includes the placement of a Newspaper Advertisement to notify all potential I&AP's about the proposed project and to invite them to register as I&APs and provide comments on the project. An advertisement was placed on page 6 of the 30th of November 2021 edition of The Herald Newspaper

distributed throughout the Port Elizabeth Region. The proof of the placement of the Newspaper Advertisement is included in **Appendix D5.**

7.3 Notice Boards/Site Notices

In accordance with the NEMA (1998) EIA Regulations, 2014, as amended, a notice board detailing the proposed activity as well as the contact details of the EAP was placed on site. The size of the notice board was 60 cm by 42 cm (i.e., A2 Site Notices) as per 41(4)(a) the notice board. On-site notices presenting the project were erected within the site, local shops, LSRWUA Irrigation Board, Municipal Library, along public roads and areas visible to the public on the 30th of November and 1st of December 2021. These locations include. The notice board and proof of its placement is included in **Appendix D4.**

7.4 Notification Letters

Regulation 41(2)(b) of the NEMA (1998) EIA Regulations, 2014, as amended requires that written notification be given to various parties who include the following:

> *(I) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;*
> *(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;*
> *(iii) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;*
> *(iv) the municipality which has jurisdiction in the area;*
> *(v) any organ of state having jurisdiction in respect of any aspect of the activity; and*
> *(vi) any other party as required by the competent authority*.

The Notification Letter that was compiled for the proposed Balancing Dam is attached as **Appendix D1.** The document provided a background on the Lower Coerney Balancing Dam, the proposed activities as well as information on how one can register as an Interested and Affected Party (I&AP) on the project to be able to be kept abreast with all developments. Notification letters were compiled and distributed to adjacent landowners and Kirkwood residential area on the 30th of November and 1st of December 2021.

7.5 Draft Scoping Report (DSR)

The Draft Scoping Report will be placed for public comment at the Kirkwood Library and the LSRWUA Irrigation Board. Based on Regulation 40(1) of the NEMA (1998) EIA Regulations, 2014, as amended,

the Report will be placed at these facilities for the legislated period of at least 30 days. The Draft Scoping Report will be issued out for public review from the **14th of October 2022 to the 14th of November 2022**. The placing of the Draft Scoping Report will allow I&APs adequate time to review the details of the project and provide, in writing, comments and concerns relating to the proposed Lower Coerney Balancing Dam. All registered I&APs will be informed of the availability of the report through various mean and proof of this will be kept.

7.6 Public and Focus Group Meetings

No public meetings have been held to date with I&APs. Based on the nature of the proposed development, the proposed site, the surrounding farming communities, the need for desirability for the dam and feedback received during the initial public participation, it is anticipated that a Public Open day will not be required for this project. However, should a need arise for a public meeting during the Scoping and/or EIA Phase, such a meeting will be held with the affected parties. A focus group meeting was held between the EAP (GA Environment), developer (DWS), LSRWUA and Scheepersvlakte Farms representatives on the 26th of May 2022 (**Appendix D3**).

7.7 Interested and Affected Parties Register and Comments on the project

From the onset of the project, a database of persons, organizations and organs of state identified as I&APs or registered as I&APs was opened and is constantly being maintained. The I&APs register is included in **Appendix D6**. Comments have been received from adjacent residents which has been captured in the Comments and Response report. The Comments and Response report is attached to **Appendix D7**.

8 DESCRIPTION OF ENVIRONMENTAL ISSUES, ASPECT AND IMPACTS

The scope of an environmental assessment is defined by the range of issues and alternatives it considers, and the approach towards the assessment that will follow. Scoping is a critical stage in the Integrated Environmental Management procedure, as it is an important tool for involving the public in the assessment process, and for structuring assessment studies (DEAT, 2002).

A Scoping Report must contain all the information that is necessary for a proper understanding of the nature of issues identified during the scoping phase of the project and must include a description of environmental issues and potential impacts, including cumulative impacts that have been identified. This chapter describes the environmental issues and impacts as identified during the scoping phase. Potential impacts identified and elaborated on in this chapter has been presented as follows:

- Impact 1: Impacts of the geohydrology;
- Impact 2: Impacts on Citrus Farming Development;
- Impact 3: Impacts on Water supply to NMBM;
- Impact 4: Impacts on indigenous plant species;
- Impact 5: Impacts on Fauna due to construction activities;
- Impact 6: Impacts on surface water;
- Impact 7: Impact on Cultural Heritage Resources;
- Impact 8: Visual Impacts;
- Impact 9: Dust and air quality;
- Impact 10: Noise Impacts;
- Impact 11: Traffic Impacts; and
- Impact 12: Socio-Economic Impacts.

In all potential impacts, an attempt has been made to outline potential impacts for all construction, and operational phases of the projects. These impacts will be assessed and presented in detail during the Impact Assessment Phase.

8.1 Impacts on the geohydrology

The construction of the dam could have an impact on the groundwater quality. Based on the Port Elizabeth 1:250 000 Geological Map Sheet, the proposed development area is underlain by the Kirkwood and the Sundays River Formation, both are part of Uitenhage Group. According to Aurecon (2019), the older Kirkwood Formation consists of porous and permeable, coarse to medium-grained, buff- and olive colored lithic sandstone whereas the rock formation of the Sundays River Formation is less porous and permeable than the older Kirkwood strata. The groundwater table lies below the

alluvial gravels within the site. However, after constructing the dam, water can be expected to leak through the upper, near-surface layers and saturate the gravel layer. The leakage may be slow due to the presence of clayey material in places, and with time it may reduce as additional clayey and silty material accumulates on the bottom of the dam. According to Aurecon (2019), the leakage to the gravels and the underlying hard-rock geology would only produce a very limited impact on the hydrogeology of the area. The underlying hard-rock's permeability is probably too low to receive much water, and therefore the effect of the dam will likely be localized and small. A detailed assessment will be undertaken during the EIA phase of the project, mitigation measures as provided by the specialist will be provided in the EMPr.

8.2 Impacts on Citrus Farming Development

The Sundays River Local Municipality is known as the most citrus producing region in the country. Addition citrus farms have been identified and are currently being implemented in the area. It is evident that there will be a requirement for additional irrigation water to support the rapid citrus farms and emerging farmers in the area. The proposed dam will be able to provide the farms with the required water for irrigation water as a balancing dam. It is proposed that the dam will be able to provide 4.6 million m^3 of balancing storage for an emergency supply of about 220 Mℓ /day. Although this is a positive impact, planning for the storage and distribution of the water will be key during the operational phase and certain measures will be required which will be discussed in the EIA Phase.

8.3 Impacts on Water Supply to NMBM

Nelson Mandela Bay Municipality (NMBM) is one of the vibrant and tourist destination areas in the country. The municipality must ensure constant water supply for the residents and tourists even in a case of emergency. Currently the municipality is supplied by the existing Scheepersvlakte Dam which has a capacity of 2 days emergency supply in the case of an emergency. The proposed Lower Coerney Balancing dam will be able to provide 4.6 million m^3 of balancing storage for an emergency supply of about 220 Mℓ /day or three (3) weeks emergency supply to the municipality. Therefore, the proposed dam will have a positive impact on the emergency water supply to the municipality.

8.4 Impacts on Indigenous Plant Species

The proposed dam is in an area of high ecological sensitivity. Although a portion (approximately 36ha) of the western section has already been cleared of the indigenous vegetation in preparation of the emerging citrus farm, approximately 50ha additional clearance of indigenous vegetation will be required for the dam. A floral survey will be undertaken as part of the EIA phase to identify the

potential impact of the proposed dam of the vegetation. Mitigation measures to avoid adverse impacts arising as a result of the removal of indigenous plant species will be included in the EMPr that will be provided during the EIA phase.

8.5 Impacts on Fauna due to Construction Activities

During the EAPs site visit, a variety of fauna were noted in the area including snakes, birds, warthogs and other wild animals which could not be identified due to the distance and thick vegetation. A faunal survey will be undertaken to assess the potential impact of the proposed dam on the faunal species that may exist within the study area. Mitigation measures for the protection of fauna will be included in the EMPr that will be provided during the EIA phase.

8.6 Impacts on Surface Water

The proposed dam is located on a drainage line. The upstream and downstream of the drainage line maybe impacted during the construction and operation phase of the project. The significance of the impact is anticipated to be medium to low with the implementation of mitigation measures. Mitigation measures to prevent surface water contamination during the construction and operational phase of the project will be provided in the EMPr that will be compiled during the EIA phase.

8.7 Impacts on Cultural Heritage Resources

Construction activities such as clearing, excavations and grading could expose or damage features of heritage and cultural value beneath the surface. Although no heritage resources of value graves, were observed during the site visits, the PalaeoMap on SAHRIS and the Palaeontological Sensitivity of the Uitenhage Group has shown a High Palaeontological Sensitivity. The proposed development of the dam is in a largely intact area and the development footprint is large (77ha), hence it is likely to have significant impacts on local palaeontological heritage. A desktop Palaeontological Impact Assessment will be undertaken during the EIA phase of the project. Mitigation measures to avoid any impacts on heritage resources during the construction and operational phase of the project will be provided in the EMPr that will be compiled during the EIA phase.

8.8 Visual Impacts

Construction sites are unsightly and can affect an area’s sense of place. The clearance of indigenous vegetation will result in adverse visual impact. However, the proposed project falls within an area of existing dams and citrus farms, hence the Lower Coerney Balancing Dam forms part of the visual landscape and the proposed dam will not have any significant visual impact.

8.9 Dust and Air Quality Impact

The proposed clearance of vegetation for the proposed dam will bring about dust and other air quality impacts. Due to the relativity big footprint of the proposed dam, the impacts on air quality are anticipated to be medium with mitigation measures during the construction phase and low during the operational phase.

8.10 Noise Impacts

Construction sites are synonymous with noise impacts. High noise levels can have an adverse impact on both site labourers as well as the public, tenants, including occupiers of adjacent land. Fauna in the vicinity of the site may also be affected by noise. Most of the noise is anticipated during the operational phase, however given the surroundings of the area, the trees and vegetation (natural noise barriers) will absorb any noise produced. In addition, there are no residential areas surrounding the site. Therefore, it is anticipated that the noise impact will be low after mitigation.

8.11 Traffic Impacts

The proposed access (gravel) roads will tie into existing surfaced roads south of the study area. Most of the traffic is anticipated during the construction phase, given the remote locality of the site and no residential areas surrounding the site, it is anticipated that there will be minimal traffic directly linked with the development. Although the proposed development is a large dam which will require large trucks to and from the development site, it is anticipated that the proposed dam will have a marginal impact on the low current traffic volumes (on the R336) and traffic congestion is highly unlikely.

8.12 Socio-Economic Impacts

The proposed dam is situated within a remote citrus farm region. In terms of land use change, it is not anticipated that the proposed dam will lead to a drastic land use change as the proposed activities will blend with the existing activities. There is a likelihood of temporary employment during the construction phase of the project. It is imperative that the contractors consider the use of labour-intensive methods where necessary for the construction of some works of the proposed dam. The impact is considered to be positive.

8.13 Impact Assessment Ratings

Key issues and general potential environmental impacts likely to be associated with the extension of the Pipe Storage facility are summarised in **Table 14**. It should be noted that the impacts identified in table overleaf are to be evaluated in the impact assessment phase of the project.

Table 14: Potential Impacts Associated with the Proposed Lower Coerney Balancing Dam

Impact	Project Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with mitigation
Impacts on the geohydrology	Construction	Negative	Local	Short Term	Low	Probable	Short term	Low	Low	Low
	Operation	Negative	Local	Long Term	Moderate	Probable	Short Term	Low	Low	Low
Citrus Farming Development	Construction	Positive	Local	Short Term	Low	Probable	Short term	Medium	Positive Impact	No Significance
	Operation	Positive	Local	Short Term	Moderate	Probable	Short Term	Medium	Positive Impact	No significance
Water supply to NMBM	Construction	Positive	Site	Long Term	Moderate	Improbable	Short Term	Medium	Positive Impact	No significance
	Operation	Positive	Site	Long Term	Moderate	Improbable	Short Term	Medium	Positive Impact	Low No significance
Impacts on indigenous plant species	Construction	Negative	Site	Permanent	High	Definite	Irreversible	Medium	Medium	Low
	Operation	Negative	Site	Short Term	High	Probable	Short Term	Low	Low	Low
Impacts on Fauna due to construction activities	Construction	Negative	Site	Medium	Medium	Probable	Short term	Medium	Medium	Low
	Operation	Negative	Site	Long Term	Medium	Probable	Short term	Low	Low	Low
Impacts on surface water	Construction	Negative	Site	Medium	Medium	Probable	Short term	Medium	Medium	Low
	Operation	Negative	Site	Long Term	Medium	Probable	Short term	Low	Low	Low
Impacts on Heritage Resources	Construction	Negative	Site	Medium	Medium	Probable	Short term	Medium	Medium	Low
	Operation	Negative	Site	Medium	Medium	Probable	Short term	Low	Low	Low
Visual Impacts	Construction	Negative	Site	Medium	Low	Probable	Short term	Low	Low	No significance
	Operation	Negative	Site	Short	Low	Probable	Short term	Low	Low	No significance
Dust and air quality impact	Construction	Negative	Local	Short	Medium	Highly Probable	Short term	Medium	Medium	Low
	Operation	Negative	Site	Short	Low	Probable	Short term	Medium	Low	Low

Impact	Project Phase	Nature of Impact	Extent	Duration	Intensity	Probability	Reversibility	Irreplaceable loss of resources	Significance without mitigation	Significance with mitigation
Noise impacts	Construction	Negative	Local	Medium	Medium	Probable	Short term	Medium	Low	Low
	Operation	Negative	Local	Short	Low	Probable	Short term	Low	Low	Low
Traffic impacts	Construction	Negative	Local	Medium	Medium	Probable	Short term	Medium	Low	Low
	Operation	Negative	Local	Short	Low	Probable	Short term	Low	Low	Low
Socio-Economic Impacts	Construction	Positive	Local	Medium	Medium	Probable	Short term	Medium	Positive Impact	No Significance
	Operation	Positive	Local	Short	Low	Probable	Short term	Low	Positive Impact	No Significance

It can be noted from this table that most of the impacts area low to no significance provided that mitigation measures are implemented. The potential impacts (negative and positive) of the proposed dam will be addressed in the impact assessment phase of the EIA. Specialist studies will be commissioned during the impact assessment phase to assess potential environmental issues.

8.14 Cumulative Impacts

The NEMA EIA Regulations (2014) defines a “cumulative impact” in relation to an activity, as the past, current, and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities. This is required on the basis that the impact of an activity that may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area. The environmental impacts that will emanate from the activities associated with the construction and operation of the proposed Lower Coerney Balancing Dam have already been discussed in this Scoping report. The impacts on fauna and flora are those of concern and where mitigation measures are not applied can lead loss indigenous species some of which may be Species of Conservation Concern (SCC). Mitigation measures to ameliorate these impacts during the construction, operational phases of the project have been discussed in some sections of this chapter. The potential cumulative impacts and mitigation measures will be discussed in detail in the EIA phase of the project.

9 PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

The proposed Lower Coerney Balancing Dam requires the undertaking of an EIA in accordance with the NEMA EIA Regulations, 2014, as amended (Government Notice 982 4 December 2017).

The EIA follows the preparation of the Scoping Report with a purpose of identifying the range of environmental impacts that are associated with the proposed development, alternatives, and the focus of the EIA. This chapter will present the proposed approach to the EIA and will address all requirements as stipulated in Appendix 2 of the NEMA EIA Regulations, 2014, as amended.

A key requirement within these regulations is the compilation of the Plan of Study for undertaking an EIA. The aim of the EIA Phase is to address the significant issues highlighted in the Scoping Phase through specialist investigation and detailed assessment. The Plan of Study details the proposed approach to the Environmental Impact Assessment, which will be in line with the EIA Regulations. The regulations stipulate that the Plan of Study for undertaking an EIA process should include the following:

i). A description of the alternatives to be considered and assessed within the preferred site; including the option of not proceeding with the activity;

ii). a description of the aspects to be assessed as part of the environmental impact assessment process;

iii). aspects to be assessed by specialists;

iv). a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;

v). a description of the proposed method of assessing duration and significance;

vi). an indication of the stages at which the competent authority will be consulted;

vii). particulars of the public participation process that will be conducted during the environmental impact assessment process;

viii). a description of the tasks that will be undertaken as part of the environmental impact assessment process; and

ix). Identify suitable measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

Each of these are discussed as follows:

9.1 Alternatives

Alternatives that have been identified by DWS during the Prefeasibility and Feasibility phase were discussed in **Chapter 6**. Detailed assessment of these alternatives will be included in the EIR.

9.2 Tasks to be undertaken during the EIA Phase and aspects to be assessed

To adequately assess and provide sufficient responses to the issues raised during the Scoping Phase, the following tasks are considered during the EIA Phase:

- Reviewing the approval for the Scoping and Plan of Study for EIA including the relevant conditions of approval;
- Continued public participation;
- Conducting specialist investigations on all the significant issues identified and raised in the Scoping Process;
- Evaluate and summarise the findings of the specialist reports;
- Undertaking a detailed impact assessment process, assessing alternatives, and providing potential mitigation measures;
- Documenting the findings of the Impact Assessment into an Environmental Impact Report (EIR); and
- Compiling a framework Environmental Management Programme.

9.3 Specialist Studies and aspects that will be assessed

To date, the following Specialist Studies have been identified as being necessary during the assessment phase:

- Terrestrial Biodiversity Impact Assessment;
- Aquatic Biodiversity and Wetland Impact Assessment;
- Desktop Palaeontological Impact Assessment;
- Agricultural Impact Assessment; and
- Heritage Impact Assessment – Compliance Statement.

9.3.1 Terrestrial Biodiversity (Fauna and Flora) Assessment

As the site was noted to be situated within a CBA, and the proposed project will include the clearance of a total of 77 ha of indigenous vegetation. An Ecological Study will be undertaken to identify any protected tree species that fall within the footprint of the proposed dam as well as the potential impact of the proposed extension on the Biodiversity.

The terms of reference for the Fauna and Flora study are as follows:

- A desktop assessment shall be undertaken in which all available background information will shall be considered. All relevant southern African national and provincial ecological databases, including those provided by the South African National Biodiversity Institute (SANBI) BGIS database, as well as high resolution aerial imagery and topographical maps, shall be reviewed to define the terrestrial ecological setting and potential ecological sensitivities of the project area
- The terrestrial biodiversity study shall consider the specialist requirements as outlined in Appendix 6 of the NEMA EIA Regulations, 2014 (as amended 2017), as well as other relevant national and provincial legislation and guidelines, particularly as pertaining to the Eastern Cape Province.
- A habitat description and as well as floral species associated with each habitat type shall be identified and inventoried, and specific emphasis shall be placed on establishing the presence (or potential presence) of floral SCC. Listed alien floral species shall be noted;
- Floral species associated with each habitat type shall be identified and inventoried, and specific emphasis will be placed on establishing the presence (or potential presence) of floral SCC. Listed alien floral species will be noted;
- Floral species associated with each habitat type shall be identified and inventoried, and specific emphasis shall be placed on establishing the presence (or potential presence) of floral SCC. Listed alien floral species shall be noted;
- Fauna species associated with each habitat type will be identified and inventoried, and specific emphasis will be placed on establishing the presence (or potential presence) of fauna SCC.

9.3.2 Aquatic Biodiversity and Wetland Assessment

Although neither the DFFE Screening report nor the SANBI LUDS Tool indicate any wetlands or aquatic sensitivities in the area, SANBI classifies the vegetation type as being ''Albany Alluvial Vegetation". This specifically classifies a part of the area as having riparian vegetation which grows on alluvium. Alluvium is gravel, silt, sand or clay (any sedimentary material) that is normally deposited by running water on the bed of streams and some types of wetlands. A dry stream bed was confirmed to exist on site, although it has reportedly not flown in decades. Because of the endangered status of the riparian vegetation, an aquatic ecological and wetland assessment is required to best manage all characteristics associated with any watercourse in and around the proposed dam development. The Terms of references for the Study will include the following:

- Identify and delineate any wetland areas and/or watercourses on and within the proposed

site where the Coerney Dam is to be constructed, according to the Department of Water Affairs' "Practical field procedure for the identification and delineation of wetlands and riparian areas";

- Determine the Present Ecological Status (PES) and Functional Integrity of identified wetlands using the WET-Health and Wet-EcoServices approach;
- Determine the Ecological Importance and Sensitivity (EIS) of identified wetlands using the latest applicable approach as supported by the DWS; and
- Identify possible impacts and recommend mitigation measures of the proposed project on the wetland and watercourses within the study site.

The aquatic biodiversity will be assessed using the tools developed under the River Health Program (RHP) determine the baseline conditions and Present Ecological Status (PES) of the aquatic ecosystems associated with the proposed development site. These tools will include:

- Assessing the in situ water quality;
- Determining the suitability of habitat (using the invertebrate habitat assessment system (IHAS) and the intermediate habitat index assessment, IHIA);
- Investigating the invertebrate community structure by means of the South African Scoring System version 5 (SASS5) as well as the Macroinvertebrate Response Assessment Index (MIRAI);
- Assessment of the fish community structure is excluded from the terms of reference due to the non-perennial nature of the stream; and
- Once the baseline had been determined, the site should be assessed for impacts that occur during the construction and operational phases.

9.3.3 Desktop Palaeontological Assessment

The Department of Forestry, Fisheries and the Environment (DFFE), screening tool revealed that the proposed southern extension will be within an archaeological and cultural heritage sensitive area with a ranking of medium sensitivity. The proposed development is located within an area of High Palaeontological Sensitivity as per the SAHRIS Palaeo Sensitivity map. It is for these reasons that a Paleontological assessment was considered for this project. The terms of reference for the Palaeontological Impact Assessment will cover the following:

- Description and location of the proposed development and provide geological and topographical maps;

- Palaeontological and geological history of the affected area;
- Identification of sensitive areas to be avoided (providing shapefiles/kml's) in the proposed development;
- Evaluation of the effect of the construction on the palaeontological resources; and
- Provide mitigation measures to ameliorate any negative impacts.

9.3.4 Heritage Impact Assessment – Compliance Statement

Although the site is located within a low Archaeological and Cultural Heritage Sensitivity theme, a compliance statement is recommended to ensure no potential heritage features are impacted upon given the large footprint of the development as well as to ensure that Section 38(1) of the NHRA is catered for. The terms of reference for the Heritage Impact Assessment – Compliance Statement will include the following:

- Undertake a Phase 1 HIA in accordance with the National Heritage Resources Act (Act 25 of 1999) (NHRA);
- Comply with specific requirements and guidelines of SAHRA and NHRA;
- The identification and mapping of all heritage resources in the area affected, as defined in Section 2 of NHRA;
- An assessment of the significance of such resources in terms of the heritage assessment criteria as set out in the regulations;
- An assessment of the impact of development on such heritage resources;
- Identify heritage resources to be monitored;
- Suggest suitable mitigation measures to address the identified impacts;
- Provide recommendations regarding the alternatives provided from a heritage perspective;
- Compile a report that reflects the above and includes appropriate mapping. Ensure that the report complies with Appendix 6 of GN No. R982 (2017);
- Prepare a heritage sensitivity map (GIS-based), based on the findings of the study. All SHP files must be provided by the Specialist; and
- Prepare a sensitivity map (GIS-based), based on the findings of the study.

9.4 Impact Assessment Methodology

In accordance with the NEMA EIA regulations (Government Notice R.982, promulgated in terms of Section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998), as amended the Environmental Assessment Practitioner (EAP) is required to assess the significance of potential impacts in terms of the following criteria as outlined in Appendix 1:

- cumulative impacts;
- nature, significance and consequences of the impact and risk;
- extent and duration of the impact and risk;
- probability of the impact and risk occurring;
- the degree to which the impact and risk can be reversed;
- the degree to which the impact and risk may cause irreplaceable loss of resources; and
- the degree to which the impact and risk can be avoided, managed, or mitigated.

Activities within the framework of the proposed development and their respective construction and operational phases, give rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into three phases from which impacting activities can be identified, namely:

Construction phase:

This phase refers to all the pre-construction and construction related activities on site, until the contractor leaves the site.

Operational phase:

This includes all post construction activities, including the operation and maintenance of the proposed development.

The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure. The methodology that will be used comprises of the following four steps:

- Step 1: Identification of positive and negative impacts of the project;
- Step 2: Identification of the significance rating of the impact before mitigation;
- Step 3: Identification of the mitigation measure and the mitigation efficiency; and
- Step 4; Identification of the significance rating of the impact after mitigation;

Activities that will be undertaken to give effect to the proposed development gives rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into the following phases discussed in **Table 15.**

Table 15: Project phases in a development

PHASES OF A PROJECT IN WHICH IMPACTS WILL OCCUR
Status Quo
The study area as it currently exists.
Pre-construction phase
All activities on site up to the start of construction, not including the transport of materials, but including the initial site preparations. This also includes the impacts that would be associated with planning.
Construction phase
All the construction and construction-related activities on site, until the contractor leaves the site.
Operational phase
All activities after construction, including the operation and maintenance of the proposed development.
The activities arising from each of the relevant phases have been included in the impacts assessment tables. The assessment endeavours to identify activities that would require environmental management actions to mitigate the impacts arising from them. The criteria against which the activities were assessed are given in the next section.

9.4.1 Assessment Criteria

The assessment of the impacts will be conducted according to a synthesis of criteria required by the guideline documents to the EIA regulations (2006) and integrated environmental management series published by the Department of Environmental Affairs and Tourism (DEAT) currently DFFE. In addition to this, it is a requirement of (NEMA 2014 Regulations (as amended), Appendices 1 and 2 that an Impact and Risk Assessment process be undertaken for Basic Assessments and Environmental Impact Reporting. The Assessment Criteria is based on the following:

- Nature of Impact,
- Extent;
- Duration;
- Intensity;
- Probability;
- Determination of significance; and
- Reversibility of impact.

Each of these is explained in **Table 16.**

Table 16: Methodology used in rating impacts of a project

ASSESSMENT CRITERIA
a) Nature of Impact
This is an appraisal of the type of effect the proposed activity would have on the affected environmental component. The description should include what is being affected, and how.
b) Extent
The physical and spatial size of the impact. This is classified as: **i) Site** The impact could affect the whole, or a measurable portion of the site. **ii) Local** The impacted area extends only as far as the activity, e.g., a footprint of the specific activity **iii) Regional** The impact could affect areas such as neighbouring farms, transport corridors and the adjoining towns.
c) Duration
The lifetime of the impact; this is measured in the context of the lifetime of the proposed project. **i) Short term** The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than any of the phases. **ii) Medium term** The impact will last up to the end of the phases, whereafter it will be entirely negated. **iii) Long term** The impact will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter. **iv) Permanent** The only class of impact which will be non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.
d) Intensity
Is the impact destructive or benign? Does it destroy the impacted environment, alter its functioning, or slightly alter it? These are rated as: **i) Low** The impact alters the affected environment in such a way that the natural processes or functions are not affected. **ii) Medium (Moderate)** The affected environment is altered, but function and process continue, albeit in a modified way. **iii) High** Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases. This will be a relative evaluation within the context of all the activities and the other

ASSESSMENT CRITERIA
impacts within the framework of the project.
e) Probability
This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time. The classes are rated as follows: **i) Improbable** The possibility of the impact occurring is very low, due either to the circumstances, design or experience. **ii) Probable** There is a possibility that the impact will occur to the extent that provisions must be made. **iii) Highly probable** It is most likely that the impacts will occur at some or other stage of the development. Plans must be drawn up before the undertaking of the activity. **iv) Definite** The impact will take place regardless of any prevention plans, and mitigation actions or contingency plans are relied on to contain the effect.
f) Determination of significance
Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The classes are rated as follows: **i) No significance** The impact is not substantial and does not require any mitigation. **ii) Low** The impact is of little importance but may require limited mitigation. **iii) Medium (Moderate)** The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels. **iv) High** The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable.
g) Reversibility of impact
Natural or human aided intervention: **(i) Irreversible** The impact will be permanent. **(ii) Short term** The impact is reversible within two years after construction. **(iii) Long term** The impact is reversible within 2 to 10 years after construction.

ASSESSMENT CRITERIA
h) The degree to which the impact can cause irreplaceable loss of resources
(i) Low The impact result in the loss of resources but the natural, cultural and social processes/functions are not affected. **(ii) Medium** The loss of resources occurs but natural cultural and social processes continue, albeit in a modified manner. **(iii) High** The impact result in irreplaceable loss of resource.

9.5 Environmental Impact Report

On completion of the Environmental Impact Assessment, the EAP will compile an Environmental Impact Report (EIR) for the Competent Authority's consideration and decision-making. The main purpose of this report is to gather and synthesise environmental information and evaluate the overall environmental impacts associated with the development, to consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIR will also provide details on the steps taken to respond to the issues identified in the scoping phase and indicate the way these issues have either been responded to or addressed.

Furthermore, a draft Environmental Management Programme (EMPr) will be compiled during the course of the EIA and will be submitted for approval as part of the final EIR. The EMPr provides guidelines to the project proponent and the technical team on how best to implement the mitigation measures and management recommendations outlined in the EIR during the construction and operational phase.

9.6 Public Participation process

Public participation during the EIA phase will continue similarly to the process undertaken for the Scoping Phase. The key tasks that will form part of the public participation process in the EIA phase include:

- Continued identification of I&APs;
- Placement of the Draft EIR for public comment;
- Continued consultation within key stakeholders and I&APs; and
- Continued recording of issues and responses.

9.6.1 Interested and Affected Parties (I&AP) Database

The database of Interested and Affected Parties will be regularly updated and expanded to include

any I&APs who become interested or request to be included in the process and will act as a record of the communication/ involvement process. All I&AP information (including contact details), together with dates and details of consultations and a record of all issues raised will be recorded within the database of I&APs.

9.6.2 Public Review of the Draft EIR

The Draft EIR will be made available for public reviewing for a period of 30 days. The information regarding the availability of the Draft EIR i.e., the dates of release and the respective venues, will be communicated to all I&APs.

9.6.3 Public or Focus Group Meetings

No public and/or focus group meetings have been held to date with I&APs. Based on the nature of the proposed development, the proposed site, the surrounding farming communities, the need for desirability for the dam and feedback received during the initial public participation, it is anticipated that a Public Open day will not be required for this project. However, should a need arise for a public meeting during the Scoping and/or EIA Phase, such a meeting will be held with the affected parties. A focus group meeting was held between the EAP (GA Environment), developer (DWS), LSRWUA and Scheepersvlakte Farms representatives on the 26th of May 2022 (**Appendix D3**).

9.6.4 Comments and Responses Report

Few comments have been received from the Kirkwood residents which has been captured in the Comments and Response report. It is anticipated that comments will be received from other Interested and Affected Parties after the review or either the Draft Scoping Report or the Draft Environmental Impact Report.

9.6.5 Authority Liaison

Consultation with the DFFE will be on-going and will continue from the communications established during the project initiation stages.

10 CONCLUSION

The Department of Water and Sanitation (DWS) is a state organ that exists to ensure equitable access to water for all South Africans as well as to conserve and protect water resources. In 2017, DWS undertook a feasibility study to assess five (5) potential dam sites for the Algoa Water Supply System (AWSS). The Lower Coerney site was eventually found to be most feasible and most viable for construction for the required balancing dam.

The existing Scheepersvlakte Dam is a balancing facility for water supply to the Lower Sundays River Water User Association (LSRWUA) and the Nelson Mandela Bay Metropolitan Municipality (NMBM) for emergency supply. The need for a new balancing dam on the Scheepersvlakte Farm is due to the inadequate smaller capacity of the existing Scheepersvlakte Dam to provide water supply to NMBM during an emergency. The main purpose of the proposed new balancing dam at the Coerney site is to eliminate the operational and balancing storage limitations imposed by Scheepersvlakte Dam.

It is a conclusion of this report that the proposed dam will have medium to low impacts on the bio-physical environment and positive socio-economic impact, provided that all mitigation measures to be detailed in the EIR are adhered to. The plan of study as provided in this report includes the following specialist assessment which will provide further potential impacts the proposed dam could potentially have on the receiving environment:

- Terrestrial Biodiversity Impact Assessment;
- Aquatic Biodiversity and Wetland Impact Assessment;
- Desktop Palaeontological Impact Assessment;
- Agricultural Impact Assessment; and
- Heritage Impact Assessment – Compliance Statement.

To date, very few comments were received from the Interested and Affected Parties which were in support of the dam which will cater for the citrus farms and provide emergency water supply to NMBM. No public and/or focus group meetings have been held to date with I&APs. Based on the nature of the proposed development, the proposed site, the surrounding farming communities, the need for desirability for the dam and feedback received during the initial public participation, it is anticipated that a Public Open day will not be required for this project. However, should a need arise for a public meeting during the Scoping and/or EIA Phase, such a meeting will be held with the affected parties.

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