Province of the
EASTERN CAPE
ECONOMIC DEVELOPMENT,
ENVIRONMENTAL AFFAIRS & TOURISM

BASIC ASSESSMENT REPORT

(For official use only)

File Reference Number:	
NEAS Number:	
Date Received:	

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2014 as amended, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 as amended and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable or **black out** the boxes that are not applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority **unless indicated otherwise by the Department**.
7. No faxed or e-mailed reports will be accepted **unless indicated otherwise by the Department**.
8. The report must be compiled by an independent environmental assessment practitioner (EAP). The EAP must satisfy conditions 11 below.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

11.1 The Environmental Assessment Practitioner (EAP) must be registered in terms of S24H Regulations with the Registration Authority EAPASA as from 8 August 2022

11.2. S24H (14) states that "only a person registered as an Environmental Assessment practitioner may perform tasks in connection with an application for an environmental authorisation contemplated in

(a)Chapter 5 of the Act read with the Environmental impact Assessment Regulations.

(b)Section 24G of the Act

(c) Chapter 5 of the National Environmental Management Waste Act 2008 (Act No 59 of 2008) read with the Environmental Impact Assessment Regulations

11.3. Tasks in regulation 14 may only be conducted by an EAP that is registered

11.4. Regulations 20 of S24H indicates the offences and penalties as indicated below:

"*20. Offences and penalties*

(1) A person is guilty of an offence if that person-

(a) contravenes regulation 14 of the Regulations; or

(b) pretends to be a registered environmental assessment practitioner or registered candidate environmental assessment practitioner.

(2) A person convicted of an offence in terms of subregulation (1) is liable to the penalties contemplated in section 49B(3) of the Act.".

Section 49B(3) of the Act states:

"A person convicted of an offence in terms of section 49A(1)(h), (l), (m), (n), (o) or (p) is liable to a fine or to imprisonment for a period not exceeding one year, or to both a fine and such imprisonment.".

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EAP'S BACKGROUND AND DECLARATION

Megan Hugo - Megan started working as an Environmental Consultant in February 2015 following the completion of her Honours degree in Environmental Science at Rhodes University in Makhanda (formerly Grahamstown). Prior to this she completed a Bachelor of Science degree, also at Rhodes University, with Zoology and Environmental Science as her majors. Megan has completed accredited courses in environmental impact assessments and ISO 14001.

Megan joined Indwe Environmental Consulting in September 2017 and was made a main member of the company in April 2018. Megan is a Registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (Reg. No 2019/1530). She is also registered with the South African Council for Natural Scientific Professions (Reg. No. 118810) and an active paid-up member of the International Association of Impact Assessment (IAIA) South Africa.

Megan is responsible for all company related operations and financial management as well as acquiring new projects at Indwe Environmental Consulting. Megan has gained experience in all aspects of Integrated Environmental Management (Full Scoping and Environmental Impact Assessments, Basic Assessments, Mining Permitting, Auditing, Strategic Environmental Planning), Ecological Reporting, Water Use related approvals through DWS, and General Project Management. Additionally, Megan is well versed in permitting requirements relating to ToPS, PNCO and NFA legislation. Example of fields in which Megan was the project manager and lead report writer include large public infrastructure projects (e.g. Regional Water Supply Schemes, Overhead Powerlines, National Road upgrades), private commercial and residential developments, small and large agricultural projects, mixed use developments, renewable energy projects, large scale public and private in stream and off stream storage dams and rehabilitation of coastal and terrestrial related environments.

Megan's key skills include her knowledge and experience in South African policy and legislation relating to development, particularly in the Eastern Cape province. Her 11-year presence in the industry has provided much insight and experience into project, technical and financial management. **Megan held the position of Registered EAP.**

Kevin Bickell joined Indwe Environmental Consulting in April 2022 following the completion of his undergraduate degree in Environmental Management from the University of South Africa (UNISA). Kevin has completed his Honours Degree in Environmental Management and is currently studying towards his master's degree in environmental management through UNISA. Kevin has strong GIS and writing skills and assists the other team members with GIS mapping and analysis, public participation, technical report writing and administration. Kevin is also responsible as acting as an Environmental Control Officer on the current construction sites where Indwe is appointed to monitor compliance with the various environmental approvals relating to a project. Kevin has gained experience in projects relating to bulk infrastructure, residential developments, mixed use developments and rehabilitation related projects. Kevin is registered as a Candidate EAP (EAPASA): Reg. NO 2022/5288. **Kevin acted as part of the project team.**

Michaela Naude - Michaela joined Indwe Environmental Consulting in February 2024 and holds the position of Junior Environmental Assessment Practitioner at the company. Michaela completed her Honours degree in Life Sciences through UNISA in 2023 and is currently studying towards her Masters Degree in Environmental Management at North-West University. Michaela is registered as a Candidate Natural Scientist with the South African Council for Natural Scientific Professions (Cand. Sci. Nat 161580) and as a Candidate EAP (Reg. No. 2022/5666) with EAPASA. Michaela is also an active paid-up member of the International Association of Impact Assessment (IAIA) South Africa. To date, Michaela has assisted in environmental impact assessment processes relating to public infrastructure, retail and agricultural projects as well as acted as the Environmental Control Officer for bulk water and sewerage construction projects. In addition, she has undertaken compliance auditing on a range of operational activities within the manufacturing and mining industries. **Michaela acted as part of the project team.**

A copy of the EAP's Curriculum Vitae and professional registration is included in **Appendix G9**.

As the lead Environmental Assessment Practitioner on this project assessment, I **Megan Hugo** can confirm the following:

1) To the best of my knowledge, all information authored by Indwe Environmental Consulting presented in this report is factually correct. We have relied on reports and information sourced from external parties. In this regard we assume that all external information is a true reflection and is factually correct.
2) I can confirm that all information of relevance received in the form of comments and inputs from stakeholders and interested and affected parties has been included; and
3) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties of relevance has been included.

For Indwe Environmental Consulting:

Megan Hugo
Registered EAP: EAPASA (Reg no. 2019/1530)
Main Member

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	NO✓

If YES, please complete form XX for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail

The location for the proposed Water Supply Scheme is situated in the Ngqondo Village, 40km northeast of Ngcobo (Figure 1). The exact coordinates of the village are -31.525166, 28.144599. The proposed pipeline will connect to the existing Water Treatment Works Facility, which is designed to pump water from the Mbashe River, and distribute water to the nearby homes. The pipeline will also connect to existing reservoirs that formed part of separate projects within the nearby villages and towns. The reticulation will extend southwards and westwards to provide water to the nearby villages along the Mbashe river, as illustrated in the below figures.

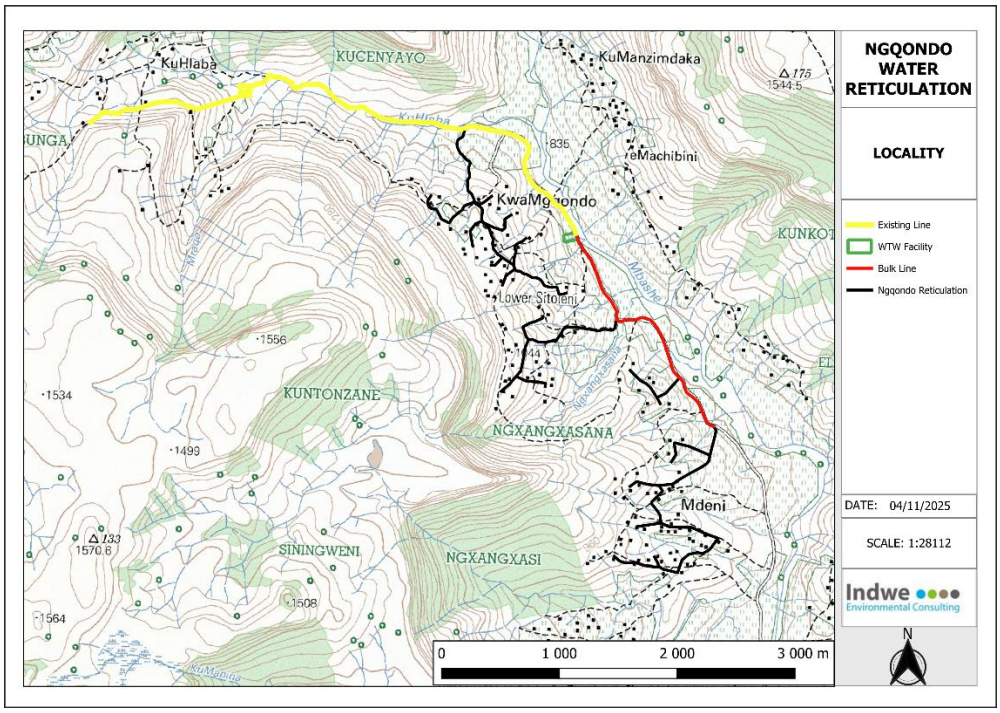

Figure 1: Topographical locality of the proposed Water Supply Scheme.

Chris Hani District Municipality have proposed the construction of the Water Supply Scheme with the following scope of works:

- Construction of approximately 1.2km of uPVC pipes of sizes ranging from 63mm diameter of various classes.
- Construction of approximately 5km of HDPE pipes of size 50mm diameter of various classes.
- Construction of approximately 4.5km of Klambon steel pipes of sizes ranging from 50mm diameter to 90mm diameter.
- Construction of stand taps, valve chambers, and all associated pipe fittings.

- Construction of new and reinstatement of existing stormwater along the reticulation mains.

Refer to Figure 2 for the general layout of the project.

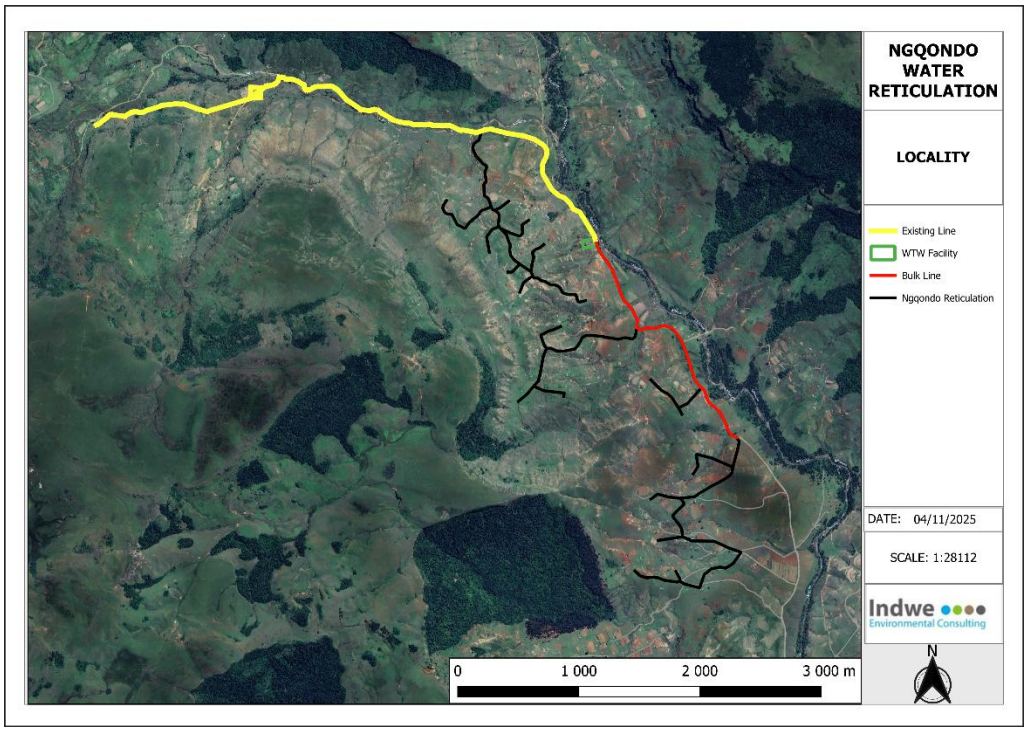

Figure 2: General Layout of the proposed Water Supply Scheme.

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

~~(a) the property on which or location where it is proposed to undertake the activity;~~
~~(b) the type of activity to be undertaken;~~
~~(c) the design or layout of the activity;~~
~~(d) the technology to be used in the activity;~~
~~(e) the operational aspects of the activity; and~~
(f) the option of not implementing the activity

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Paragraphs 3 – 13 below should be completed for each alternative.

S1:NO-GO alternative
The No-Go alternative is applicable to the proposed development. This would involve not installing the proposed pipeline and reticulation to provide water to the Ngqondo Village.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.
List alternative sites if applicable.

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative S1[1] (preferred or only site alternative)	[redacted]	
Alternative S2 (if any)		
Alternative S3 (if any)		

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative S1 (preferred or only route alternative)		
• Starting point of the activity	31° 32'58.37"S	28° 8'49.56"E
• Middle point of the activity	31° 31'53.89"S	28° 8'54.19"E
• End point of the activity	31° 31'19.33"S	28° 7'50.17"E
Alternative S2 (if any)		
• Starting point of the activity	[redacted]	
• Middle point of the activity		
• End point of the activity		
Alternative S3 (if any)		
• Starting point of the activity	[redacted]	
• Middle point of the activity		
• End point of the activity		

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

[1] "Alternative S.." refer to site alternatives.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
Alternative A1[2] (preferred activity alternative)	[redacted]
Alternative A2 (if any)	
Alternative A3 (if any)	

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	10,7 km
Alternative A2 (if any)	[redacted]
Alternative A3 (if any)	

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	[redacted]
Alternative A2 (if any)	
Alternative A3 (if any)	

5. SITE ACCESS

Does ready access to the site exist?	YES✓ [redacted]
If NO, what is the distance over which a new access road will be built	N/A

Describe the type of access road planned:

Existing roads are present on site, however, the reticulation lines that will feed to the scattered homes along the hillside do not have any formal or well-established access roads. Thus, it is anticipated that informal access tracks will need to be installed to allow for vehicle and machinery access to install the pipelines that feed to the more isolated homes. The bulk line will follow the existing gravel road that runs parallel to the Mbhashe River. Existing tracks and informal roads will be followed as much as possible to avoid cutting entirely new tracks.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

Refer to Appendix C.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

6.1 the scale of the plan which must be at least a scale of 1:500;

[2] "Alternative A.." refer to activity, process, technology or other alternatives.

6.2 the property boundaries and numbers of all the properties within 50 metres of the site;

6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;

6.4 the exact position of each element of the application as well as any other structures on the site;

6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;

6.6 all trees and shrubs taller than 1.8 metres;

6.7 walls and fencing including details of the height and construction material;

6.8 servitudes indicating the purpose of the servitude;

6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):

- rivers;
- the 1:100 year flood line (where available or where it is required by DWA);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or invested with alien species);

6.9 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and

6.10 the positions from where photographs of the site were taken.

Refer to Appendix A.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form**.** It must be supplemented with additional photographs of relevant features on the site, if applicable.

Refer to Appendix B for site photographs for the proposed development.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

Refer to Appendix C.

9. ACTIVITY MOTIVATION

9(A) SOCIO-ECONOMIC VALUE OF THE ACTIVITY

What is the expected capital value of the activity on completion?	**R62 287 709.37**
What is the expected yearly income that will be generated by or as a result of the activity?	**N/A**

Will the activity contribute to service infrastructure?	**YES✓**
Is the activity a public amenity?	**YES✓**
How many new employment opportunities will be created in the development phase of the activity?	**Unknown**
What is the expected value of the employment opportunities during the development phase?	**R8 600 000.00**
What percentage of this will accrue to previously disadvantaged individuals?	**100%**
How many permanent new employment opportunities will be created during the operational phase of the activity?	**N/A**
What is the expected current value of the employment opportunities during the first 10 years?	**R460 000.00**
What percentage of this will accrue to previously disadvantaged individuals?	**100%**

9(B) NEED AND DESIRABILITY OF THE ACTIVITY

Motivate and explain the need and desirability of the activity (including demand for the activity):

Ngqondo village and the surrounding areas currently have a lack of services, which includes fresh drinking water. This project aims to provide potable water by installing standpipes within vicinity to the scattered homesteads around the village. This project will also provide an opportunity for employment to several local labourers who might be skilled in laying pipes and trench work.

This project also falls in line with Chris Hani District Municipality's (CHDM) Integrated Development Plan (IDP) (2025-2026), whereby it is aiding in the implementation and installation of water reticulation and providing safe drinking water to rural areas within their district. As noted in Figure 3 below, the Engcobo area has a large quantity of households, whereby 9 956 have no formal piped water and a large portion only have access to water within 200m of their household. As part of the development scheme of CHDM, this project aims to provide water to households within this region.

Households by type of water access - Chris Hani District Municipality, 2022 [Number]

	Piped water inside dwelling	Piped water in yard	Communal piped water: less than 200m from dwelling (At RDP-level)	Communal piped water: more than 200m from dwelling (Below RDP)	No formal piped water	Total
Inxuba Yethemba	12,804	9,026	219	24	131	22,203
Intsika Yethu	4,341	7,388	19,773	7,817	5,674	44,992
Emalahleni	2,784	14,531	12,978	3,953	1,514	35,760
Engcobo	5,928	5,364	14,138	6,452	9,956	41,839
Sakhisizwe	3,576	8,474	3,995	1,327	628	18,000
Enoch Mgijima	28,993	33,802	12,281	3,166	1,038	79,280
Total Chris Hani	58,426	78,585	63,385	22,739	18,940	242,075

Source: Statistics South Africa.

Figure 3: Statistics of household access to water within CHDM (CHDM Draft IDP, 2025; page 117).

As noted within the CHDM IDP, "research conducted by HIS Markit Rex 2020 and further reviled by Stats SA Census conducted in 2022. It depicts that Dr AB Xuma has more backlog followed by Intsika Yethu Municipality with Enoch Mgijima being the least with water backlog." This means that most of the CHDM water infrastructure backlog has shifted to former Dr AB Xuma Local Municipality area previously called Engcobo LM, thus further emphasising the need for implementing such projects to lessen the backlog on water supply projects.

Indicate any benefits that the activity will have for society in general:

- Provide short term job creation during the construction phase
- Employment potential due to skills transferred during project implementation
- Provide SSME opportunities for communities on route
- Provide water for local villages which include providing potable water to the residents of the Ngqondo Village
- Improved water conservation and demand management

Indicate any benefits that the activity will have for the local communities where the activity will be located:

- Job creation during the construction phase
- Provide SSME opportunities for communities on route
- Improved access to potable water on completion of the project
- Improved health and hygiene
- Growth in the level of agriculture and other commercial activities by the community

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
National Environmental Management Act (NEMA) (Act No. 107 0f 1998)	DFFE	1998
National Environmental Management Laws Amendment Act, 2022 (Act No. 2 of 2022) **GG. No 48869**	South African Government & DFFE	2023
The Constitution of South Africa Act, 1998 (Act No. 108 of 1996)	South African Government	1996
Environmental Impact Assessment Regulations of 2014, as amended *EIA Regulations promulgated under the NEMA GN No. 327; 324, 325, and 326 for listed activities that may impact on the environment.*	DFFE & DEDEAT	2017
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	DFFE & DEDEAT	2004
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	DRDAR	1983
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	South African Heritage Resources Agency (SAHRA) & Eastern Cape Provincial Heritage Resource Agency (ECPHRA)	1999
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in Terms of Sections 24(5)(A) and (H) And 44 of the National Environmental Management Act, 1998, When Applying for Environmental Authorisation **GN. R. 320; GG. No 43110**	DFFE & DEDEAT	2020

Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) And (H) And 44 of the National Environmental Management Act, 1998, When Applying for Environmental Authorisation **GN. R. 1150; GG. No 43855**	DFFE & DEDEAT	2020
National Water Act, 1998 (Act 36 of 1998)	DWS	1998
General Authorisation in terms of Section 39 of the National Water Act (Act No. 36 of 1998), Section 21 (c) and (i), as amended in 2023.	DWS	1998
Dr AB Xuma Local Municipality Final IDP 2023-2024	Dr AB Xuma Local Municipality	2023 - 2024
Chris Hani District Municipality Draft IDP 2025 - 2026	Chris Hani District Municipality	2025

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(A) SOLID WASTE MANAGEMENT

Will the activity produce solid construction waste during the construction/initiation phase?	**YES✓**
If yes, what estimated quantity will be produced per month?	**~30m³**

How will the construction solid waste be disposed of (describe)?

The solid construction waste will be that of spoil and other material from excavation activities that cannot be used as backfilling. A suitable spoil site must be located to effectively spoil the material in a non-harmful manner towards the environment. Such a spoil site would include an abandoned borrow pit, quarry or an area that has undergone significant erosion, but does not fall within 100m of a watercourse. Alternatively, if no such area is available within an affordable distance to the project area, a registered landfill must be located and used.

Additionally, general waste from workers will be generated at the site camp. This waste will be disposed of at registered landfill site in Engcobo.

Where will the construction solid waste be disposed of (describe)?

General waste will be disposed of at a registered landfill site, which will be situated in Engcobo.

Will the activity produce solid waste during its operational phase?	**NO✓**
If yes, what estimated quantity will be produced per month?	**N/A**

How will the solid waste be disposed of (describe)?

N/A

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	NO✓
If yes, inform the competent authority and request a change to an application for scoping and EIA.	
Is the activity that is being applied for a solid waste handling or treatment facility?	NO✓
If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.	

11(B) LIQUID EFFLUENT

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	NO✓
If yes, what estimated quantity will be produced per month?	N/A
Will the activity produce any effluent that will be treated and/or disposed of on site?	NO✓
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.	
Will the activity produce effluent that will be treated and/or disposed of at another facility?	NO✓
If yes, provide the particulars of the facility:	

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N/A

11(C) EMISSIONS INTO THE ATMOSPHERE

Will the activity release emissions into the atmosphere?	YES✓
If yes, is it controlled by any legislation of any sphere of government?	NO✓
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.	

If no, describe the emissions in terms of type and concentration:

During the construction phase, emissions into the atmosphere will be limited to the construction dust. Sources of emissions include those produced by heavy vehicles and machinery involved in site preparation and construction activities related to installing the pipeline. These activities are anticipated to occur only over a short period. During the operational phase, the installed structures will not produce any atmospheric emissions.

11(D) GENERATION OF NOISE

Will the activity generate noise?	**YES✓**	
If yes, is it controlled by any legislation of any sphere of government?		**NO✓**

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

The use of machinery and vehicles on site during the construction will emit noise, however, this noise will be limited to the few vehicles and machinery operating on site and within the immediate working area. The standard working hours must also be adhered to, according to the municipal by-laws.

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

	the activity will not use water✓

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month:	N/A
Does the activity require a water use permit from the Department of Water Affairs?	YES✓

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

In terms of GN 4167 of 2023 titled "General Authorisation in terms of Section 39 of the National Water Act, 1998 for water uses as defined in Section 21 (c) or Section 21(i)", water uses that fall within the ambit of this Government Notice require "General Authorisation" provided the water use is within the limits of the said General Authorisation. According to, the definition of "regulated area of a watercourse" for Section 21(c) or (i) of the Act refers to a) the outer edge of the 1 in 100 year flood line and or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; b) in absence of a determined 1 in 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 or; c) a 500 m radius from the delineated boundary (extent) of any wetland or pan.

In terms of the National Water Act (Act 36 of 1998) an application for a General Authorisation will be submitted to DWS for the following water uses: Section 21(c) and (i) due to the development and construction within the Department of Water and Sanitation's 500m regulated area of a wetland and 100m of a watercourse.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

This project will not include any designs to improve the energy efficiency as the activity will not use electricity in the construction and operation phase.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

N/A

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section C and indicate the area, which is covered by each copy No. on the Site Plan.

Section C Copy No. (e.g. A): [ ]

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES✓

If YES, please complete form XX for each specialist thus appointed:

All specialist reports must be contained in Appendix D.

Indwe Environmental Consulting has identified that the following important Specialist Assessments which will be required in order to assess the important environmental factors on site and how these environmental factors will be impacted by the proposed Water Supply Scheme in the Ngqondo Village.

In terms of additional "specialist" input, the following "specialist" assessments were commissioned:

1. **Aquatic Biodiversity Assessment**
2. **Archaeological and Cultural Impact Assessment**
3. **Palaeontological Impact Assessment**
4. **Terrestrial Biodiversity Assessment including Plant and Animal Species Themes**

According to the National Web Based Screening Tool, the following sensitivities applicable to the project and the site were identified:

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
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

All remaining sensitivities not covered by the specialist studies mentioned above will be dealt with and motivated in Appendix G7- Screening Tool Deliverables.

14. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

[redacted]	1:20 – 1:15✓	[redacted]

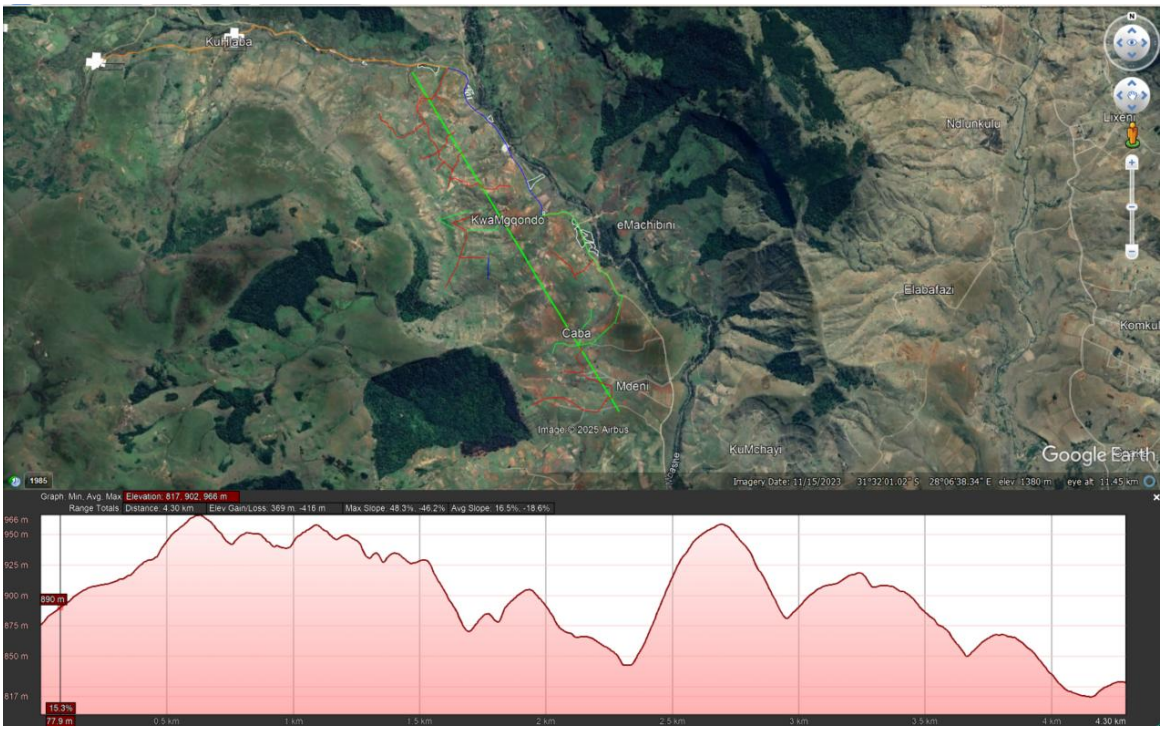

Figure 4: Elevation profile as shown through the middle of the site.

Alternative S2 (if any):

[redacted]

Alternative S3 (if any):

[redacted]

15. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

~~2.1 Ridgeline~~
~~2.2 Plateau~~
2.3 Side slope of hill/mountain✓
~~2.4 Closed valley~~
~~2.5 Open valley~~
~~2.6 Plain~~
~~2.7 Undulating plain / low hills~~
~~2.8 Dune~~
~~2.9 Seafront~~

16. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

	Alternative S1:		Alternative S2 (if any):	Alternative S3 (if any):
Shallow water table (less than 1.5m deep)		NO✓		
Dolomite, sinkhole or doline areas		NO✓		
Seasonally wet soils (often close to water bodies)	YES✓			
Unstable rocky slopes or steep slopes with loose soil	YES✓			
Dispersive soils (soils that dissolve in water)	YES✓			
Soils with high clay content (clay fraction more than 40%)		NO✓		
Any other unstable soil or geological feature		NO✓		
An area sensitive to erosion	YES✓			

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

17. GROUNDCOVER

Indicate the types of groundcover present on the site:

4.2 Natural veld – scattered aliens E✓

4.7 Cultivated land✓

4.10 Bare soil✓

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

	Natural veld with scattered aliens[E]✓		
	Cultivated land✓		Bare soil✓

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

18. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

5.1 Natural area✓

5.5 Informal residential✓

[redacted]
5.33 Agriculture✓
5.34 River, stream or wetland✓
[redacted]
5.36 Mountain, koppie or ridge✓
[redacted]

If any of the boxes marked with an "N "are ticked, how will this impact / be impacted upon by the proposed activity.
N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity.
If YES, specify and explain: **N/A**

If YES, specify: **N/A**

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.
If YES, specify and explain: **N/A**

If YES, specify: **N/A**

19. ENVIRONMENTAL THEMES

The national web-based Environmental Screening tool allows for the generating of a Screening Report referred to in Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended, whereby a Screening Report is required to accompany any application for Environmental Authorisation. The National Environmental Screening Tool indicates the following for each sector of the development, which has relevance to this section.

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
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

19.1. TERRESTRIAL BIODIVERSITY

The specialist report, titled "Proposed Ngqondo WSS Reticulation-Botanical, Faunal (Terrestrial) and Terrestrial Biodiversity Compliance Statement" was compiled by Big Thorn Environmental in collaboration with Coastal Environmental Services (CES). The report investigates the various terrestrial themes and the impacts the proposed project would have on these features. A desktop and field assessment were conducted by the specialists. The following sections cover the topics discussed in the report.

19.1.1. Climate, Geology, Soil, Topography

Climate

The temperate and rainfall information from the nearest town, Ngcobo, has been used to estimate the climatic conditions in the project area (Figure 6). The data indicate that the project area experiences seasonal fluctuations in both temperature and rainfall. The area experiences relatively cool summers (average of 22˚C) and mild winters (average of 13˚C). It must be noted that the project area is located at the foothills of mountain ranges that frequently experience winter snowfall and can experience much colder temperatures during the snow events. The proposed project falls within a summer rainfall area, which peaks between December-March. Winter rain, although less frequent, does occur.

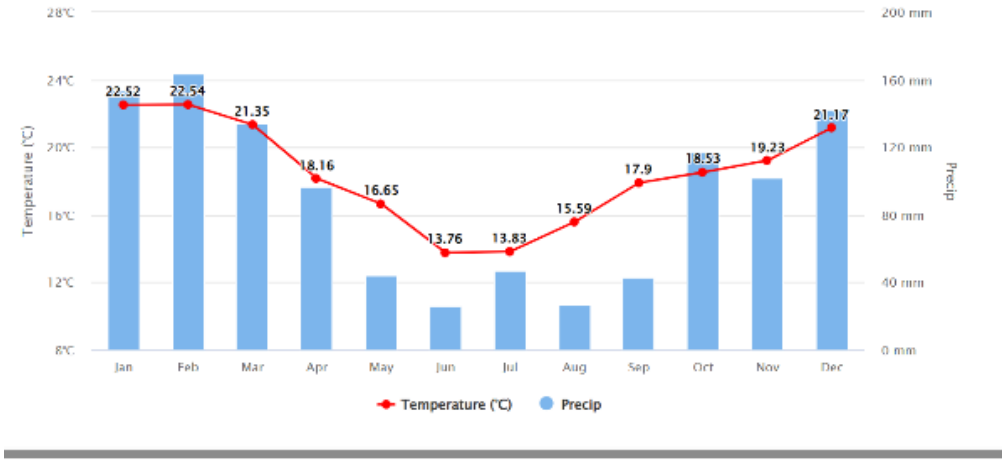

Figure 5: Climate data for the town of Ngcobo (Hawley, 2025)

Geology and Soils

The geology of an area influences the soil formation, and in turn influences vegetation composition and structure, and is therefore a factor that is considered when describing the vegetation type(s) and the species that it supports. The underlying geology in the project area consists of an underlying Karoo Supergroup, overlain by Beaufort Group and Tarkastad Subgroup (Figure 7). The resulting soils are typically red and greenish-gray mudstone, clay-loam with fine to medium grained sandstone. In the western portion of the project, where the existing pipeline is routed, is underlain by the Molteno formation.

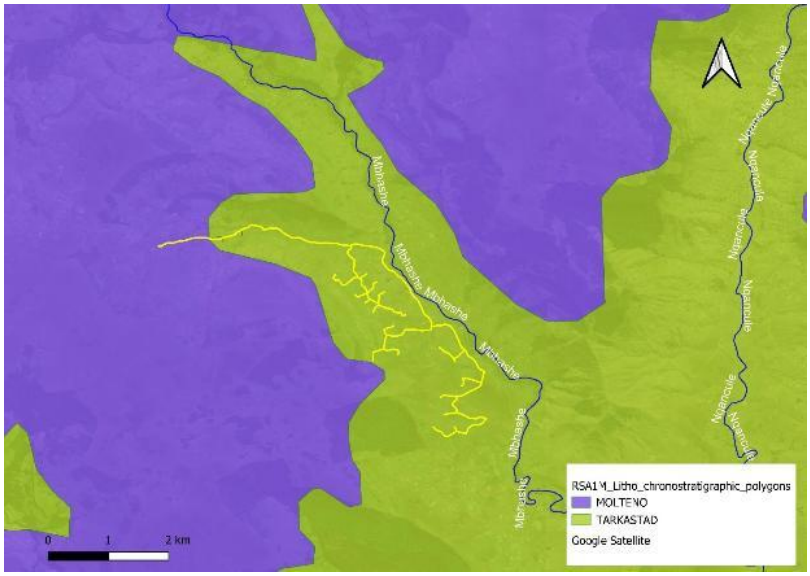

Figure 6: Geology of the project area (Hawley, 2025).

Hydrology and Topography

This report therefore briefly describes the numerous ephemeral streams that the pipeline needs to cross. The significant erosion in the project area indicates that soil erosion is a risk, especially in water courses. For this reason, stream crossings need to be stabilised to ensure that pipeline installation does not contribute towards further erosion, especially since these streams drain into the Mbhashe River, which is a FEPA priority river.

There are also numerous wetlands associated with valley bottoms closer towards the Mbhashe River, but also wetland seeps in the upper slope areas of the pipeline, where a self in the slope offers flatter terrain. It is possible that plant and animal species of interest area associated with the wetlands and wetland edges. One wetland seep will be impacted by a proposed reticulation pipeline.

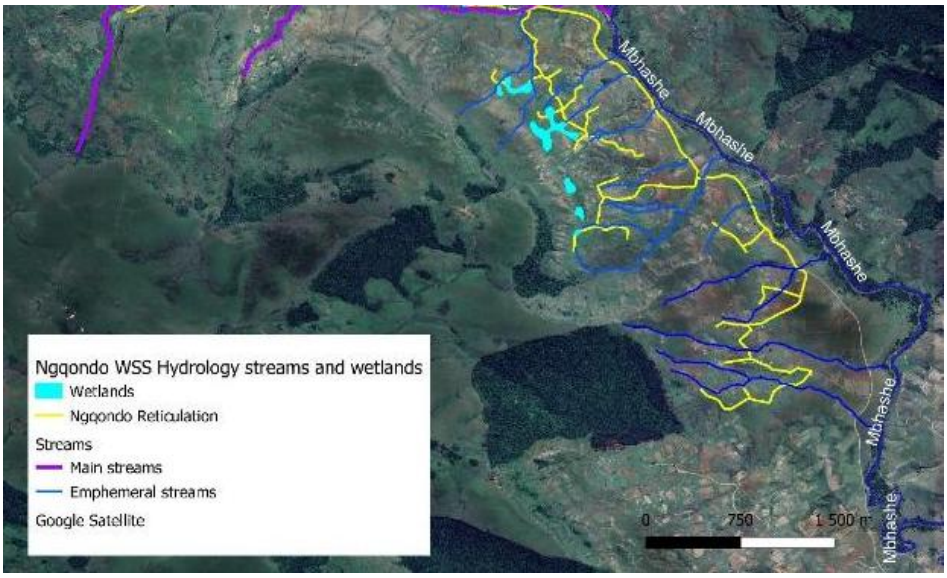

Figure 7: Hydrology of the project area (Hawley, 2025).

19.1.2. Botanical Assessment (Plant Theme)

19.1.2.1. Site Floristics

According to the South African Vegetation Map (Mucina *et al*., 2006-2024) two vegetation types occur in project area, namely Drakensberg Foothill Moist Grassland, which is classified as **Least Concern** and small sections of Mthatha Moist Grassland (Figure 9), which is classified as **Endangered** (Red List of Ecosystems, 2022). (Figure 10). It must be noted that the proposed reticulation pipelines are routed along existing access roads, which are essentially no longer natural. Therefore, the proposed pipeline will not contribute towards any further loss of this ecosystem (See SEI below). Southern Mistbelt Forest is also present in the project area in valleys and south-facing slopes. No forest will be impact by the proposed Ngqondo WSS and will therefore not be considered further.

The key distinguishing features between the two grassland types are the underlying soils which support varying levels of species diversity:

- The soils of Drakensberg Foothill Moist Grassland are formed by the mudstones and sandstones of the Tarkastad subgroup and Molteno Formation, as well as intrusive dolerite. The deep soils (80cm) are well drained, with 15-55% clay content. These soils support a wide diversity of herbs and bunch grasses such as *Themeda triandra*.
- The soils associated with Mthatha Moist Grassland are mudstones of the Tarkastad and Adelaide subgroups, which are highly leached. This grassland is comparatively species poor and is characterised by sourveld grasses such as *Eragrostis* sp.

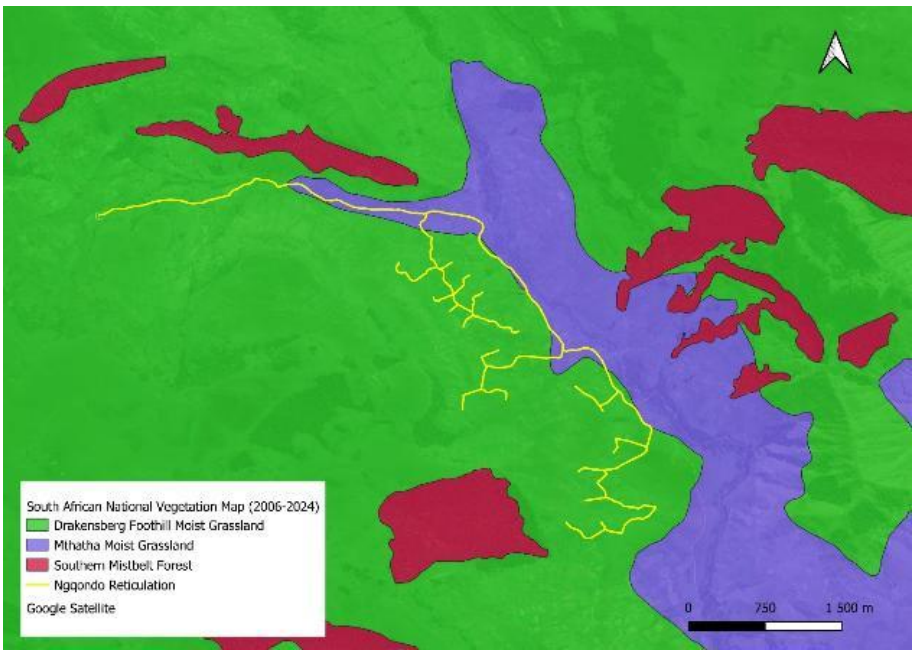

Figure 8: Vegetation map (Mucina *et al*., 2006 - 2024) and the ecosystem threat status (RLE, 2021) (Hawley, 2025).

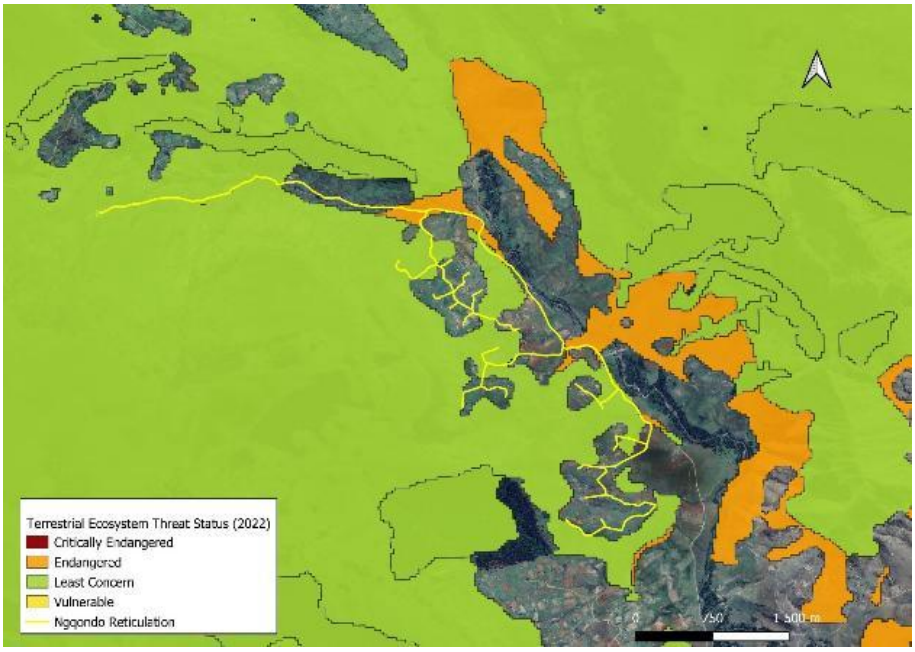

Figure 9: Ecosystem threat status as per the National Red List of Ecosystems (2022) (Hawley, 2025).

19.1.2.1.1. Indigenous Plant Species

The potential SCCs that have been flagged in the National Screening Tool have been assessed in terms of the likelihood of occurrence (Table 1). The probability of the species being in the project areas is based on the presence of suitable preferred habitat and also considers the sensitivity of the species to over-grazing, soil erosion and medicinal use.

Table 1: List of potential SCC plant species and likelihood of occurrence.

Family	Species name	Threat status	Description of habitat	Likelihood of occurrence
LAURACEAE	*Ocotea bullata*	EN	*Ocotea bullata* occurs forests across South Africa, from the kloofs of Table Mountain to the mountain forests of Limpopo.	Unlikely to occur along the pipeline routes – no forest habitat.
	Sensitive species 1252	VU	This species is widely distributed in South Africa, growing in grasslands and forest. The species experienced a significant decline in the 1950's when it was harvested for medicinal purposes.	Possible, but unlikely to persist close to settlements and cultivated land.
	Sensitive species 662	EN	SS 662 is known from just a few localities in the mountains to the north of Encobo and Umtata in Eastern Cape. Here the plants grow on shaded, wet rock ledges at the head of mountain streams.	Possible, in streams that have not been eroded.
	Sensitive species 609	VU	SS 609 is endemic to South Africa and is distributed in KwaZulu-Natal and Eastern Cape. Naturally found in the understory of coastal forest and at the edge of seeps and vleis in grassland, at altitudes ranging from 350–1 400 m.	Possible, at the edge of seeps on higher-lying slopes.
	Sensitive species 535	EN	It is usually found in damp grassland near streams from 1 520 to 2 590 m altitude.	Possible, in streams that have not been eroded.
	Sensitive species 554	VU	This species is found on dolerite outcrops in grassland.	Unlikely, no suitable habitat present.
	Sensitive species 441	EN	Wetlands, seepages or stream edges in high altitude grassland, 1 500-2 000 m.	Possible, at the edge of seeps and streams on higher-lying slopes.
	Sensitive species 451		Damp, rocky grasslands, 100-3000 m.	Possible, suitable habitat present.
	Sensitive species 1248	VU	This species occurs at low and medium altitudes, and is usually found along mountain ranges, in thickly vegetated river valleys, under bush clumps and in boulder screes. It has been recorded as scrambling at the margins of karroid, succulent bush in the Eastern Cape, and in KwaZulu-Natal, and it may occur in bushy kloofs at the coast and in the midlands.	Unlikely, no suitable habitat present.
ROSACEAE	*Prunus africana*	VU	*Prunus africana* is confined to evergreen forests from near the coast to the mist belt and montane forests in KwaZulu-Natal, Eastern Cape, Swaziland, Mpumalanga, Zimbabwe and tropical Africa.	Unlikely to occur along the pipeline routes – no forest habitat.

19.1.2.1.2. Alien and Invasive Plant Species

Five (5) alien invasive species classified as Category 1b and 2 on the National Environmental Management: Biodiversity Act (2004) Alien Invasive Species Lists, (2020) were recorded from the photographic evidence (Table 2). Category 1b species are invasive species requiring compulsory control as part of an invasive species control programme. Landowners are required to remove and destroy these species. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. The proposed Ngqondo WSS project activities must not result in the further spread of these alien invasive species.

Table 2: Alien and Invasive plant species recorded on site (Hawley, 2025).

Species name	Common name	Alien Invasive Category
Cirsium vulgare	Scotch Thistle	1b
Eucalyptus sp	Eucalyptus	1b
Acacia mearnsii	Black Wattle	2

Species name	Common name	Alien Invasive Category
Acacia dealbata	Silver Wattle	2
Solanum chrysotrichum	Devils' fig	1b

19.1.3. Faunal Assessment (Animal Theme)

19.1.3.1.1. Faunal Species of Conservation Concern

A total of 36 faunal SCC could possibly occur within the general area of the proposed Ngqondo WSS development. While several invertebrates species were noted, there is no suitable habitat in the development sites for the threatened invertebrate species ("Forest Invertebrate") that was listed in the National Screening Tool report.

The following threatened faunal species potentially occur in the project area: 27 bird SCC, 8 single mammal SCC, and a single reptile SCC are listed (Table 3). The likelihood of occurrence of these species on site has been assessed based on suitable habitat and habitat condition (Table 3). Based on an assessment of distribution, no amphibian SCC are likely to occur in the area.

Table 3: Potential Avifaunal SCC and indicated species recorded on site (EN – endangered, VU – vulnerable, NT – near threatened, LC – least concern (Hawley, 2025).

Common Name	Scientific Name	Regional Red List Status	Global Red List Status	Likelihood of Occurrence
Birds				
Harrier, Black	*Circus maurus*	**EN**	**EN**	Moderate
Crane, Wattled	*Grus carunculatus*	**EN**	**VU**	Low
Hornbill, Southern Ground	*Bucorvus leadbeateri*	**EN**	**VU**	Low
Crane, Grey Crowned	*Balearica regulorum*	**VU**	**EN**	Moderate
Duck, Maccoa	*Oxyura maccoa*	**VU**	**EN**	Low
Secretarybird	*Sagittarius serpentarius*	**VU**	**EN**	Low
Blackcap, Bush	*Sylvia nigricapillus*	**VU**	**VU**	Moderate
Crane, Blue	*Grus paradiseus*	**VU**	**VU**	Low
Vulture, Cape	*Gyps coprotheres*	**VU**	**VU**	**High**
Bustard, Denham's	*Neotis denhami*	**VU**	**NT**	Moderate
Eagle, Crowned	*Stephanoaetus coronatus*	**VU**	**NT**	Low
Korhaan, Blue	*Eupodotis caerulescens*	**VU**	**NT**	Low
Eagle, Verreaux's	*Aquila verreauxii*	**VU**	**LC**	Low
Finfoot, African	*Podica senegalensis*	**VU**	**LC**	Low
Harrier, African Marsh	*Circus ranivorus*	**VU**	**LC**	Moderate
Darter, African	*Anhinga rufa*	**NT**	**LC**	Low
Duck, Yellow-billed	*Anas undulata*	**NT**	**LC**	Moderate
Egret, Great	*Ardea alba*	**NT**	**LC**	Low
Falcon, Lanner	*Falco biarmicus*	**NT**	**LC**	Moderate
Hamerkop	*Scopus umbretta*	**NT**	**LC**	Low
Heron, Black-crowned Night	*Nycticorax nycticorax*	**NT**	**LC**	Moderate
Kite, Black-winged	*Elanus caeruleus*	**NT**	**LC**	Moderate
Owl, Marsh	*Asio capensis*	**NT**	**LC**	Moderate
Pochard, Southern	*Netta erythrophthalma*	**NT**	**LC**	Low
Teal, Red-billed	*Anas erythrorhyncha*	**NT**	**LC**	**High**

Common Name	Scientific Name	Regional Red List Status	Global Red List Status	Likelihood of Occurrence
Rockjumper, Drakensberg	*Chaetops aurantius*	**LC**	**NT**	Low
Thrush, Sentinel Rock	*Monticola explorator*	**LC**	**NT**	Moderate
Mammals				
Giant Golden Mole	*Chrysospalax trevelyani*	**EN**	**EN**	Low
Mountain Reedbuck	*Redunca fulvorufula*	**EN**	**EN**	Low
Dark-footed Forest Shrew	*Myosorex cafer*	**VU**	**VU**	Low
White-Tailed Rat	*Mastromys albicaudatus*	**VU**	**VU**	Low
African Clawless Otter	*Aonyx capensis*	**NT**	**NT**	Moderate
Grey Rhebok	*Pelea capensis*	**NT**	**NT**	Moderate
Spotted-necked Otter	*Hydrictis maculicollis*	**VU**	**NT**	Low
Vlei Rat	*Otomys auratus*	**NT**	**NT**	**High**
Reptiles				
Coppery Grass Lizard	*Chamaesaura aenea*	**LC**	**NT**	Moderate

The species that have been given a likelihood of occurrence higher than **LOW** are mainly those that will likely only traverse the site during foraging or dispersal activity. This is especially relevant to the raptor and Crane species. Other species will likely be restricted to suitable areas of habitat nearby, but are likely to remain there, rather than venturing onto the site itself. This is applicable to Bush Blackcap (forest patches), Denham's Bustard (grassland patches), Yellow Billed Duck and Black Crowned Night Heron (riparian patches), and Sentinel Rock Thrush (rocky patches).

Regarding mammal SCC, only the Vlei Rat is likely to occur on the development site, as they tend to become accustomed to human activity. African Clawless Otter will likely only occur in the riparian areas, while Grey Rhebok will likely remain in the high-altitude grassland and rocky slope areas, if they have not been hunted out. Neither of the Endangered mammal species are likely to occur within the development area, as the Giant Golden Mole is confined to forest habitats and Mountain Reedbuck, if they have not been hunted out, are shy antelope that would not be expected to occur around settlements.

The Coppery Grass Lizard has specific habitat requirements and is only likely to occur in the high-altitude grasslands in the north-western area of the project, which will not impacted by the proposed pipeline reticulation of the Ngqondo WSS.

19.1.3.2. Assessment of Site Ecological Importance (Sensitivity)

The Species Environmental Assessment Guideline criteria (SANBI, 2020) were applied to assess the Site Ecological Importance (SEI) or sensitivity of the proposed new reticulation pipeline routes. The assessment considers criteria such as conservation importance (CI), functional integrity (FI), and receptor resilience (RR) (Appendix B of the specialist report) to determine sensitivity. These criteria were applied as a combined assessment for the plant and animal theme to the proposed pipeline routes.

The conservation importance for the natural and degraded grasslands is considered Low-Very Low due to high grazing pressure around the settlements and historical cultivation (Table 4). The receptor resilience for all areas is low-very low, as evidenced by the slope erosion throughout the vicinity indicating that soils do not readily recover from disturbances and are vulnerable to erosion. Wetlands are areas that could potentially support species of conservation of concern, are considered important ecological service infrastructure. The resulting sensitivity ranking of wetlands in the project are therefore high.

Table 4: SEI of habitats/communities along the reticulation routes of the Ngqondo WSS (Hawley, 2025).

	CI	FI	RR	Sensitivity
Degraded areas	Very Low	Low	Very Low	Low

Natural grassland	Low	Medium	Very Low	Medium
Wetlands	High	Medium	Low	High

The resulting map represents the High, Medium and Low sensitivity along the length of the pipeline (Figure 11 & 12).

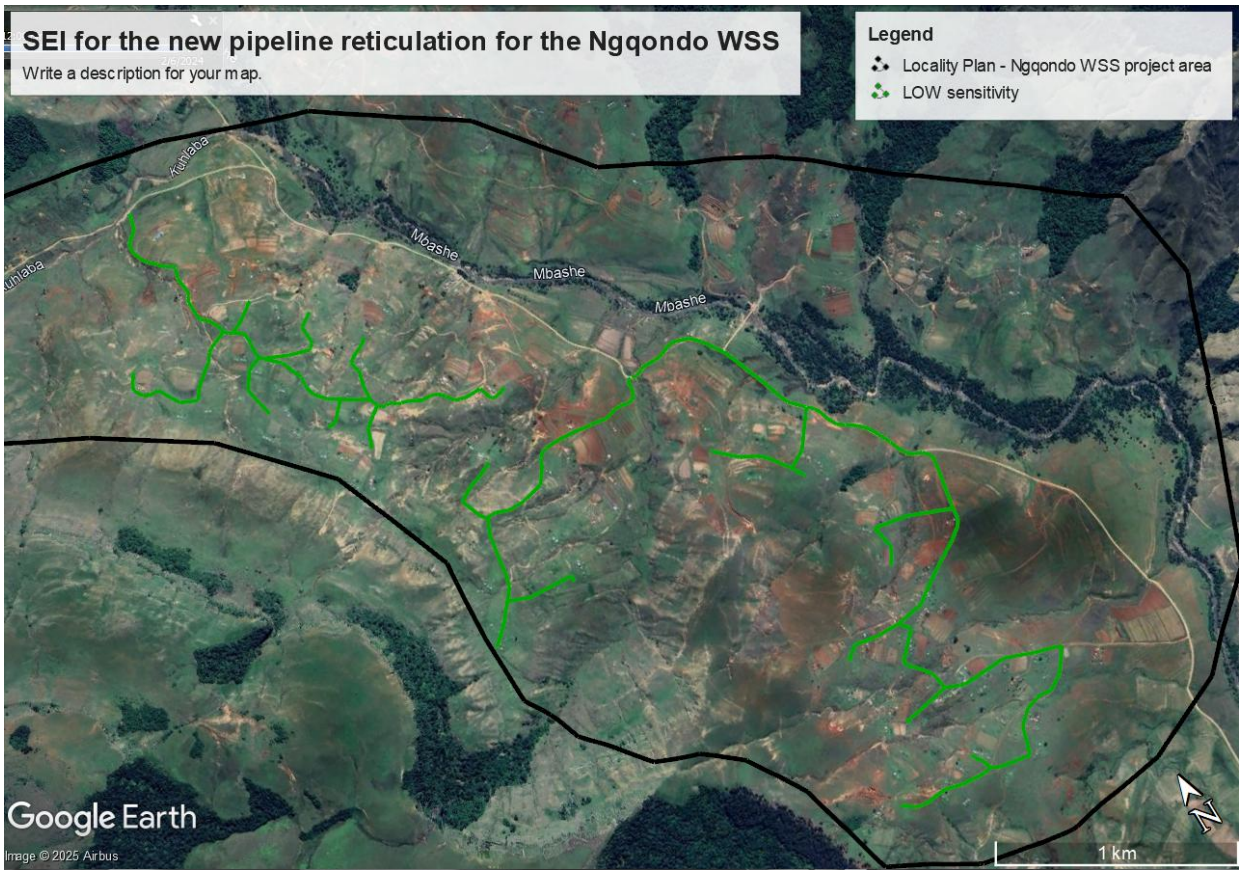

Figure 10: Sensitivity of the pipeline route associated with the new Ngqondo WSS reticulation.

19.1.4. Terrestrial Biodiversity Assessment

19.1.4.1. Ecological drivers and processes

Grasslands in South Africa cover approximately one third of South Africa's total land surface area and support high levels of biodiversity. Grasslands are considered important water production landscapes and provide various ecosystem services particularly for rural communities in South Africa (SANBI, 2013).

The two (2) key ecological drivers of grassland ecosystems include climate and fire, which influences their character, community structure, composition, and primary productivity. In addition to climate and fire, other ecological drivers influencing these features include grazing, soil types, and nutrient status. Due to their high biodiversity and their suitability for human habitation, these ecosystems are often negatively impacted by various anthropogenic activities including grazing by livestock, over harvesting of natural resources, inappropriate fire regimes, mining, agriculture, urban and industrial expansion, amongst others (SANBI, 2013).

19.1.4.2. Strategic Water Source Areas (SWSAs)

The WWF and CSIR (2017) identified twenty-one (21) Strategic WSAs for surface water (SWSA) which covered 8% of South Africa and supplied 50% of the mean annual runoff, expanding on the work of the National Freshwater Priority Areas (NFEPA 2011), which identified high water-yield areas and high groundwater recharge areas. A 2021 review of SWSAs resulted in additional areas being mapped.

Strategic Water Source Areas (SWSAs) are defined as areas of land that either: (a) supply a disproportionate quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b). SWSAs are in high rainfall areas and contribute to sustained river flows, which are important for supporting people and communities who depend directly on rivers for their water, especially during the dry season and droughts. However, only 11% of SWSAs receive formal protection. For these reasons, managing the terrestrial water catchments in these areas are critical for the maintenance of water quality and quantity and land use decisions need to ensure that the management objectives required of SWSAs are considered.

The proposed Ngqondo WSS is located in the Eastern Cape Drakensberg SWSA (Figure 13) which drains into the south-flowing Mbhashe River, which one of the Eastern Cape's major rivers. The soil in the project area appears to be highly eroded, and the sediment that is transported downstream by runoff will be affecting the quality of the water that drains into the Mbhashe River. Given the vulnerability of the soil to disturbance, in order to reduce the impact on the SWSA the installation of the pipelines must:

- Be carefully considered in terms of rain season and periods of rain.
- Should be concluded in the shortest amount of time. It is suggested that short sections at a time are installed and rehabilitated as soon as possible with indigenous grass species.
- When digging trenches, topsoil should be stacked separately to lower soil horizons and the trench back-filled with lower horizons first and ending with the topsoil layer on top.

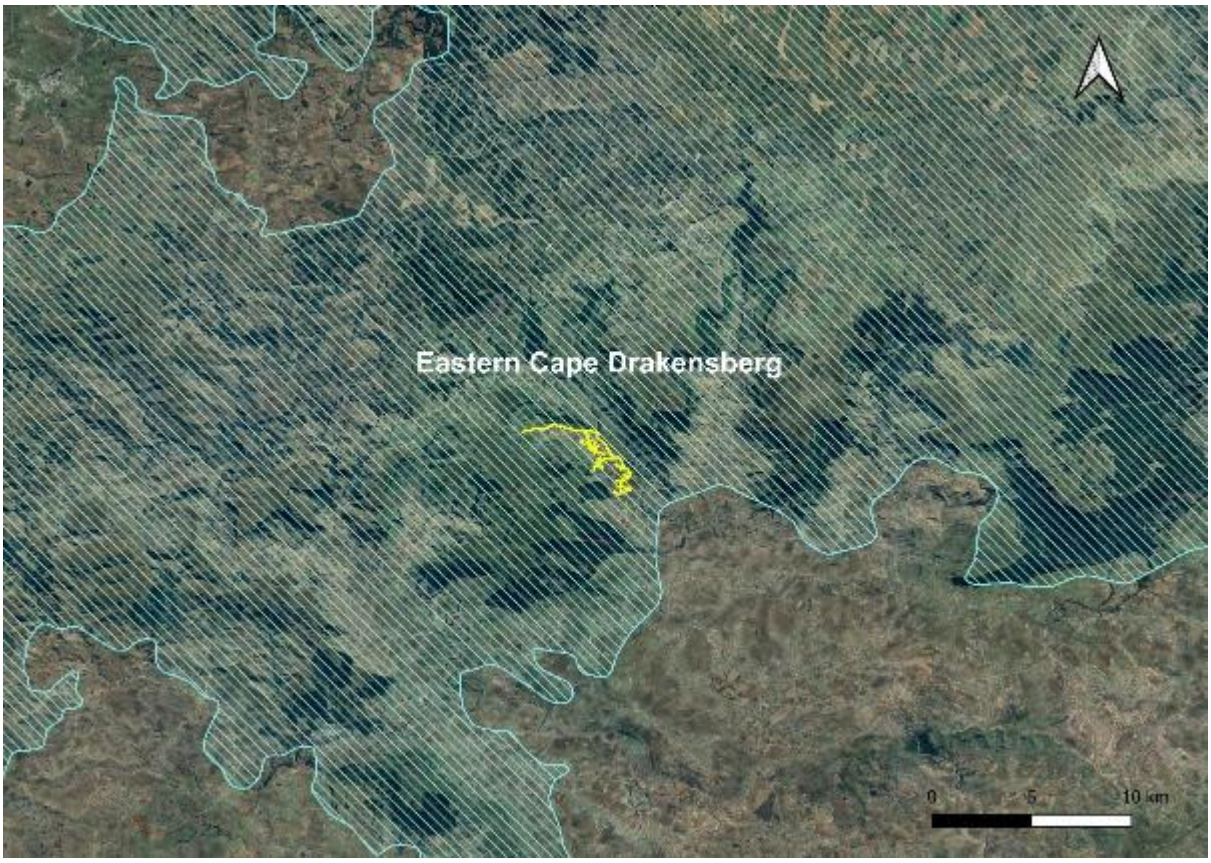

Figure 11: Eastern Cape Drakensberg Strategic Water Source Area in relation to the project area (pipelines indicated by yellow lines) (Hawley, 2025).

19.1.4.3. Eastern Cape Biodiversity Conservation Plan (ECBCP, 2019)

In terms of the Eastern Cape Biodiversity Conservation Plan (2019), sections of the proposed new Ngqondo WSS reticulation are located in a Terrestrial Critical Biodiversity Area (CBA) 1 and 2 (Figure 14). CBAs are defined as areas that are required to meet biodiversity targets. The land use objective for CBA1 and CBA2 is to maintain them in a natural state. The ECBPC

(2019) was modelled using an integrated land cover map (based on the National 2014 landcover map available at the time). The National land cover map was used to identify areas that were still in a natural state. The scale and resolution the mapping does not always reflect the conditions on the ground, and for this reason all Biodiversity spatial plans should be ground truthed.

In the case of the proposed Ngqondo WSS reticulation, most of the sections that are routed with CBA1 and CBA2 are along existing access roads, or traverse highly degraded (eroded) and previously cultivated land (Figure 15 and Figure 16 a-d). The condition of the grasslands within the broader of project area is generally poor due to overgrazing and historical cultivation which has led to severe erosion. In addition, certain sections of the proposed pipeline reticulation are routed along access roads or through severely eroded areas, the vegetation has been permanently modified. The habitats along these sections of pipeline are unlikely to be supporting plant SCC and possibly experience transient faunal SCC (mainly birds) that may fly through the site or use the wetlands on the higher-lying slopes. The proposed pipelines therefore do not constitute a loss of CBA1 or CBA2, as they have already been modified/degraded.

One section of pipeline (Section 6/6) that is routed through CBA 1 in the very south is in a natural state and is located on a slope that is vulnerable to soil erosion, and has been highlighted as a medium sensitivity in the SEI analysis. It is suggested that options for rerouting this section should be considered.

Figure 12: Severe erosion along the access roads and on slopes in the distance due to cultivation and overgrazing (Hawley, 2025).

Figure 13 a-d: Examples of sections of pipeline reticulation that are routed through CBA1 and CBA2.

19.1.4.4. Protected Areas and Protected Area Expansion Strategy Priorities

The proposed Ngqondo WSS reticulation is located approximately 55km west of the closest protected area, the Nduli Nature Reserve. The site is not located within a National Protected Area Expansion Strategy Focus Area, and the closest priority area is approximately 40km north of the proposed activity (Figure 17).

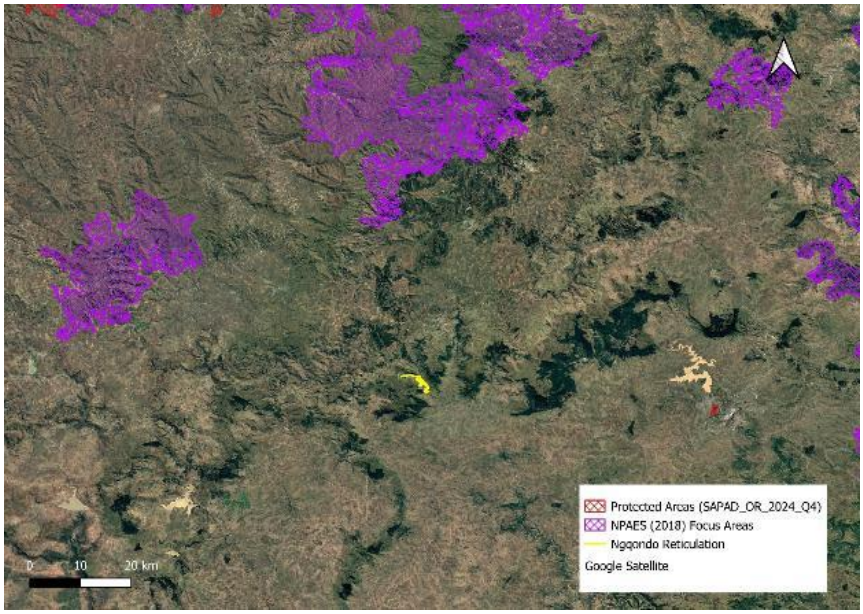

Figure 14: Protected Areas (SAPAD, Q1-2025) and NPAES (DFFE, 2018) (Hawley, 2025).

19.1.5. Conclusion and recommendations

19.1.5.1. Summary of findings

The assessment found that the majority of the proposed Ngqondo WSS pipeline routes traverse areas already heavily impacted by human activity, such as existing access roads and land degraded by erosion and historical cultivation. As a result, these sections are unlikely to support significant plant species of conservation concern, with only transient faunal species, such as birds, possibly making use of the altered habitats. The SEI analysis identified sensitive habitats associated with high-altitude seep wetlands, which could potentially support plant SCC. This and the ecosystem services supplied by the wetlands require that we treat them as high sensitivity habitats and alternative routes are suggested in Section 18.1.5.2 below.

The location of the project within a Strategic Water Source Area requires that the impact on surface water quality and quantity is minimised. Therefore, emphasise must be placed on minimising construction impacts and placing appropriate efforts into rehabilitation management to prevent run-off of soil and soil erosion.

The pipelines do not represent further loss of critical biodiversity areas (CBA1 and CBA2) where the land is already modified. However, one section of pipeline in the southern extent, which passes through a natural CBA1 area with moderate sensitivity, warrants consideration for rerouting to avoid unnecessary ecological impact. The project site does not fall within or near any current protected areas or priority expansion zones.

Overall, the findings indicate that, the proposed development will not result in significant additional impacts to biodiversity.

19.1.5.2. Recommendations

The following is recommended for inclusion into the Environmental Management Programme:

- Conduct a search and rescue prior to clearing especially along the edges of streams at stream-crossings and the edges of wetlands where construction is likely to impact the vegetation.

- Rehabilitate/re-vegetate construction areas with indigenous plant species as soon as possible. Installing small sections at a time will decrease the time that soil is exposed and allow for revegetation as trenches are closed.
- During construction remove AIPs that establish within the demarcated construction areas, including laydown and construction camps if applicable.

In addition, specific measures to minimise soil disturbance and soil erosion must be included in the EMPr. Suggestions include the following for construction:

- Construction should not be undertaken during the rainy season if possible, or during periods of rain.
- Pipe installation should be concluded in the shortest amount of time. It is suggested that short sections are installed at a time and rehabilitated as soon as possible, with indigenous grass species.
- When digging trenches, topsoil horizons should be stacked separately to lower soil horizons on either side of the trench, and the trench backfilled with lower horizons first and ending with the topsoil layer on top.

19.1.6. Statement and opinion of the specialist(s)

The authors confirm that for the Plant Theme, Animal Theme and Terrestrial Biodiversity Theme, there are no concerns regarding the sensitivity of the WSS and associated infrastructure, and that no significant impacts will result from the proposed development. It is therefore the opinion of the specialists that the proposed development may be authorised.

19.2. Aquatic Biodiversity

As part of the requirement for the EIA application process, a Freshwater Ecological Assessment was compiled by **GroundTruth**. The report, compiled in August 2025, is titled "Ngqondo Water Supply Scheme, Aquatic Biodiversity Assessment, Eastern Cape" and the responsible professional for the assessment was Steven Ellerly supervised by Juan Tedder, registered with the South African Council for Natural Scientific Professions (SACNASP) (Reg no. 132408). The specialist report provided specifics around the aquatic biodiversity status of the study area.

For the sake of this report, the development site has been contextualised within the broader landscape (Figure 12). Two distinct wetland types have been classified within the study area, namely a depression wetland (shown as DEPR on the map) and a hillslope seep (shown as SEEP on the map). Depression wetlands are considered among the most threatened inland wetland ecosystem types in South Africa, often falling within the Critically Endangered or Endangered categories due to their isolation, small size, and vulnerability to land-use change. Hillslope seeps, while more widespread, are also sensitive to disturbance and hydrological alteration. Although the seeps in this study area are currently classified as Least Concern, their ecological function remains vital, particularly in maintaining baseflow to downstream systems. The deterioration of remaining healthy examples of both wetland types must be avoided, and their conservation should be prioritised.

19.2.1. National Freshwater Ecosystem Priority Areas (NFEPA)

The National Freshwater Ecosystem Priority Areas (NFEPA) project represents a multi-partner project between the Council for Scientific and Industrial Research (CSIR), South African National Biodiversity Institute (SANBI), Water Research Commission (WRC), Department of Water Affairs (DWA), Department of Environmental Affairs (DEA), Worldwide Fund for Nature (WWF), South African Institute of Aquatic Biodiversity (SAIAB) and South African National Parks (SANParks). More specifically, the NFEPA project aims to:

- Identify Freshwater Ecosystem Priority Areas to meet national biodiversity goals for freshwater ecosystems; and
- Develop a basis for enabling effective implementation of measures to protect FEPA's, including free-flowing rivers.

The first aim uses systematic biodiversity planning to identify priorities for conserving South Africa's freshwater biodiversity, within the context of equitable social and economic development. The second aim comprises a national and sub-national component: The national component aims to align DWA and DEA policy mechanisms and tools for managing and conserving freshwater ecosystems. The sub-national component aims to use three case study areas to demonstrate how NFEPA products should be implemented to influence land and water resource decision-making processes at a sub-national level. The project further aims to maximise synergies and alignment with other national level initiatives such as the National Biodiversity Assessment (NBA) and the Cross-Sector Policy Objectives for Inland Water Conservation.

While the NWM5_AEA layer identified a river in the vicinity, the NFEPA layer (Nel et al., 2011) was used to determine its conservation status. The Mbashe River, which intersects a portion of the 500 m DWS-regulated buffer, has been flagged as a non-FEPA river and is currently in a moderately modified ecological condition (Ecological Category C). Although not prioritised for fish conservation, its proximity to sensitive wetland systems and its role in regional hydrological connectivity warrant careful consideration during planning and construction.

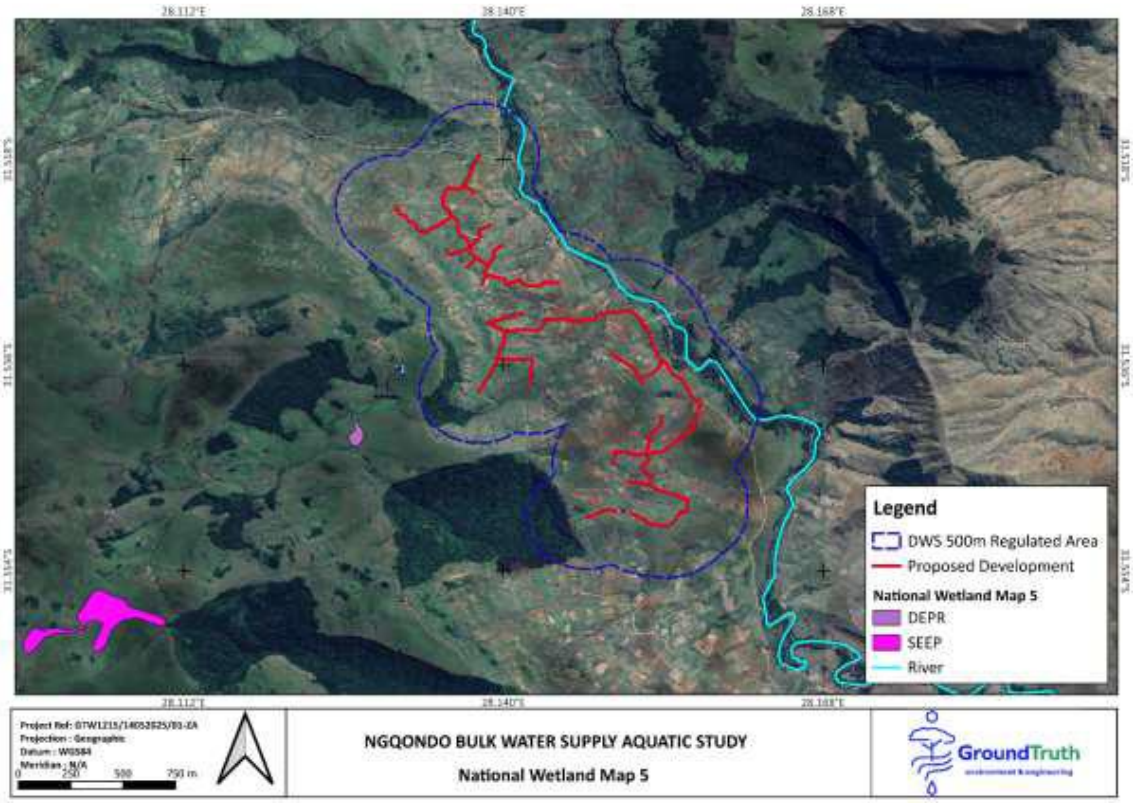

Figure 15: Overview of the National Wetland Map 5 coverage of the study area (Ellery, 2025)

19.2.2. Strategic Water Source Areas (SWSA's)

Strategic Water Source Areas or SWSA's are national ecological infrastructure assets that are essential for water security. These areas of high rainfall make up just 10% of the land area of South Africa, Lesotho and Eswatini but supply 50% of water to these countries. What happens within the boundaries of SWSAs has an impact on water quality and quantity for millions of people and for economic and agricultural activity downstream. A total of 20 SWSA's were identified. SWSA can also be separated into surface water sources (SWSAsw) and groundwater sources (SWSAgw). Groundwater SWASs are areas which have a high groundwater recharge / availability and are classified as a nationally important resource.

The proposed site is, however, not located within a SWSA and will therefore not have any impact on the existing quality and quantity (yield and capacity) of any SWSA's.

19.2.3. Freshwater Aquatic Habitat

A total of 49 watercourses were observed to be hydrologically connected to and within 500m of the proposed water supply pipelines (**Figure 17**). These watercourses are made up of the following hydrogeomorphic types:

- One lower foothills river (LF) associated with the Mbashe River
- Ten mountain headwater streams (MHS)
- Four mountain streams (MS)
- Two transitional rivers (TR)

- One upper foothills river (UF)
- One channelled valley-bottom (CVB) wetland;
- Four depression (DEPR) wetlands;
- Seven hillslope seep (SEEP) wetlands;
- Nineteen watercourses (WC) with no riverine or wetland indicators.

As identified by the specialist, due to the steep nature of the landscape, many of the watercourses have experienced extensive natural erosion which has likely been accelerated by grazing and the development of roads and houses in the catchments of these systems. All of the DEPR wetlands are located on flat 'bench' like features on the hillside, likely coinciding with a layer of rock that has not eroded at the same rate as the surrounding landscape. The CVB wetland coincides with an area of deposition and is controlled by a bedrock sill at its toe.

The SEEP wetlands are all located on relatively steep hillsides which likely have an impervious lithology below them, which forces interflow to the ground surface. The LF River is the Mbashe River which flows along the eastern portion of the study site and the UF River is a tributary of the Mbashe River which defines the northern side of the study area. The TR and MHS riverine units all flow from the hillside where the pipelines will be constructed into the Mbashe River. These smaller riverine systems are all relatively steep in their gradient and are non-perennial systems. The WC's are scattered across the study site and have been classified as watercourses because they have natural channel characteristics, but do not have the soil or vegetation characteristics that would have them be categorised as wetlands or riverine systems.

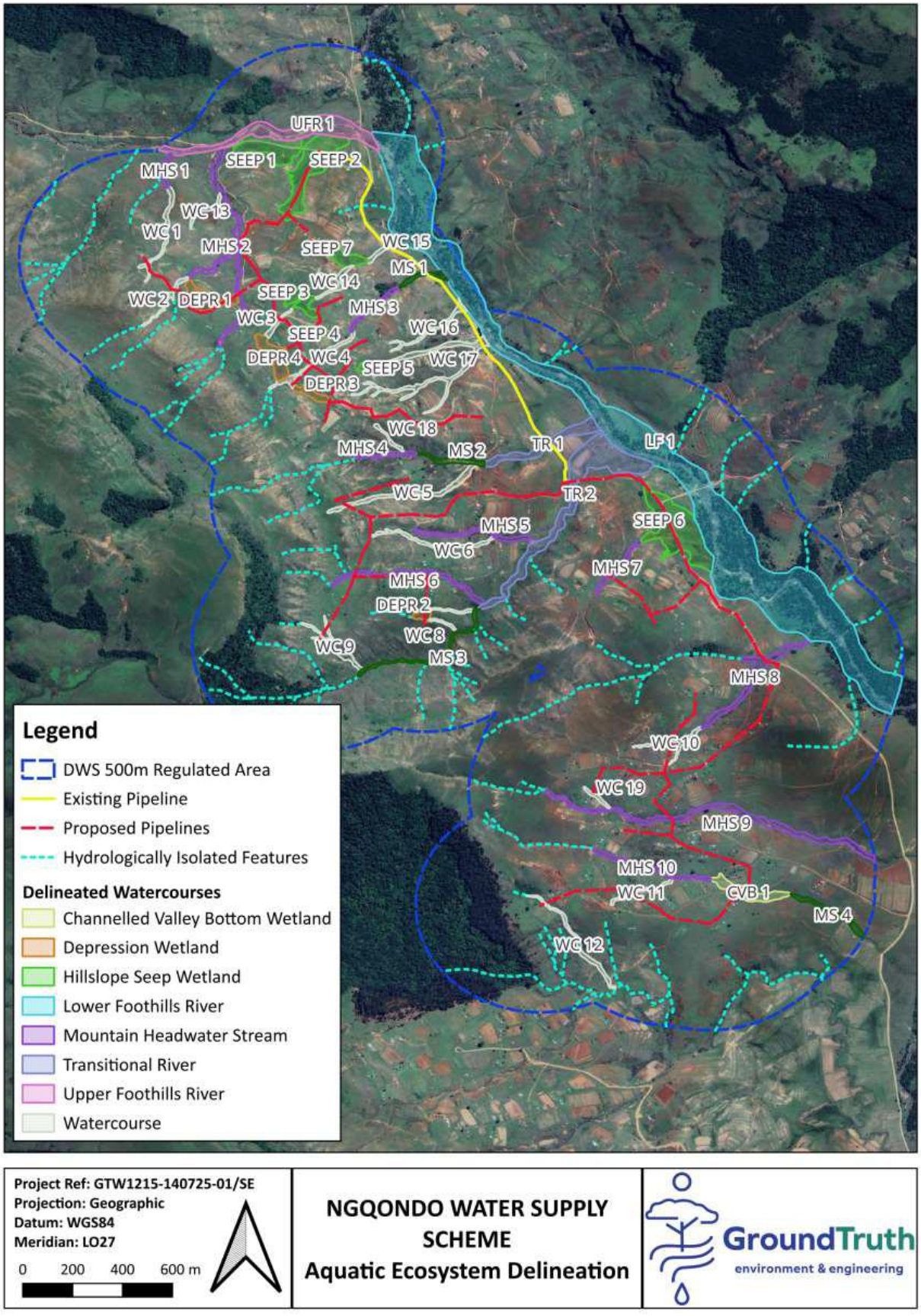

Figure 16: Aquatic ecosystems and hydrologically isolated features within 500m of the proposed developments (Ellery, 2025).

19.2.4. Results of the Aquatic Biodiversity Assessment

19.2.4.1. Present Ecological State

The PES of the wetland ecosystems was assessed for the hydrology, geomorphology, vegetation and water quality components for the current scenario. Similarly, the PES of the riverine ecosystems was assessed for multiple ecological components including alteration of hydrology, vegetation, aquatic fauna, physio-chemistry and other indicators of ecological condition for the current scenario. Generally, the ecological condition of the aquatic ecosystems ranged from being ***largely natural*** to being ***moderately*** to ***largely*** modified. Generally, the impacts across the aquatic ecosystems were similar and included:

- Cultivation within the aquatic ecosystems (predominantly within the wetland areas) which has resulted in the disturbance of the soil and a complete shift in the vegetation composition within the aquatic ecosystems.
- Construction of infrastructure such as roads or houses within the aquatic ecosystems has resulted in the infilling of some of the aquatic ecosystems and has also resulted in the modification of channel characteristics within the aquatic ecosystems thereby modifying patterns of flow distribution and retention.
- The landscape is extremely steep, so there is some level of natural erosion that is going to occur. However, excavation of material and road construction through the aquatic ecosystems have accelerated some of these erosional processes and led to increased loss of soil from some aquatic ecosystems.
- The proliferation of invasive alien species in some of the aquatic ecosystems has resulted in the alteration of vegetation characteristics in these ecosystems.
- The widespread rearing of livestock in the area means many of the aquatic ecosystems are heavily grazed, especially in winter. Furthermore, the movement of livestock (particularly cattle) results in the trampling and erosion of some of the more well used areas of the aquatic ecosystems.

19.2.4.2. Aquatic ecosystem goods and service delivery

The EGS of the aquatic ecosystems was assessed using the WET-EcoServices (Level 2) assessment technique for both rivers and wetlands. Generally, the EGS delivery ranged from ***very low*** to ***moderately high*** for both rivers and wetlands. The EGS provided by the aquatic ecosystems included:

- Provisioning services included water supply, as many residents in the area rely on the multiple springs and rivers in the area as their main source of water, grazing for livestock, and cultivation as many cultivated areas were located within wetlands.
- Regulating services provided by aquatic ecosystems included:
    - Limited water quality enhancement given the demand for these services was low, and the ability of many of the ecosystems to supply them was also low
    - Erosion control and sediment trapping services
    - Streamflow regulation was specifically provided by seep and depression wetlands.

Given that the EGS assessment does not provide a single consolidated score, the scores for each aquatic ecosystem are not presented in this report. However, the EIS scoring process incorporates the EGS scores and provides a consolidated score for the EGS. Therefore, the EIS score can be taken as a fair representation of the EGS score for the aquatic ecosystems.

19.2.4.3. Ecological importance and Sensitivity

The EIS of the aquatic ecosystems ranged from ***low/marginal*** to ***moderate***, with only the Mbashe River itself receiving a ***high*** EIS score. Generally, the factors that contributed to the EIS scores for the aquatic ecosystems were associated with the fact that some of the ecosystems fall within an endangered vegetation type and the other ecosystems fall within a vegetation type that currently receives little to no protection. A pair of crowned cranes were observed to be feeding in the northern portion of the study area, which indicated that the seep wetlands are certainly utilised for feeding by an endangered animal, with the possibility of them being used as a breeding site as well. The Mbashe River is an important fish nursery and has an assemblage of important and rare aquatic fauna which contributed to its ***high*** EIS score.

Table 5: Seep 1 Details

Ngqondo SEEP 1	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-2
Habitat type	Hillslope Seep Wetland		Latitude:	-31.51744	Longitude:	28.13587
Photograph						
IHI/PES	Condition Score	Key current impacts				
	C	Road crossing through the wetland, heavy grazing and modification of vegetation, signs of historical cultivation in the wetland.				
EIS Score	Moderate EIS (score of 1.7) with the score being derived from the ecological importance due to the presence of crowned cranes in the wetland at the time of the assessment.					
Risks	Minor risks are posed to this wetland given that there are no direct crossings that are proposed for this wetland. Minor risks include increased runoff from a burst pipe in the catchment of the wetland.					

Table 6: Seep 2 Details (Crossing T11E-1)

Ngqondo SEEP 2	Crossing No:	T11E-1	Quaternary Catchment	T11E	Map Reference	Figure 8-2
Habitat type	Hillslope Seep Wetland		Latitude:	-31.51833	Longitude:	28.13758
Photograph						
IHI/PES	Condition Score	Key current impacts				
	D	Road crossing through the wetland, heavy grazing and modification of vegetation, extensive erosion within the wetland, the naturally unchanneled wetland is now channelled and hydrologically compromised.				
EIS Score	Moderate EIS (score of 1.7) with the score being derived from the ecological importance due to the presence of crowned cranes in the wetland at the time of the assessment.					
Risks	Moderate risks associated with the current alignment of the pipeline. These risks are associated with the likely further erosion of the gully within the wetland, especially if the pipeline is constructed within the gully. Recommendation to realign this pipeline to be outside of the wetland.					

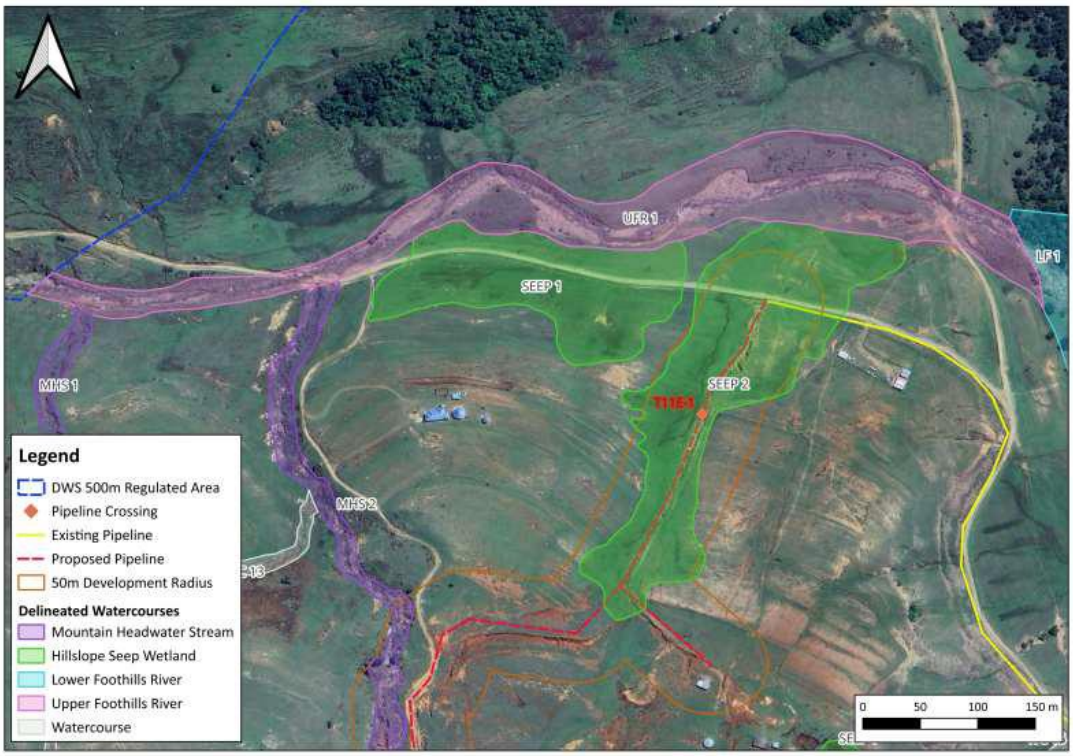

Figure 17: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically SEEP 1, SEEP 2 and UFR 1 (Ellery, 2025).

Table 7: Seep 3 details (crossing T11E-8)

Ngqondo SEEP 3	**Crossing No:**	T11E-8	**Quaternary Catchment**	T11E	**Map Reference**	Figure 8-3
Habitat type	Hillslope Seep Wetland		**Latitude:**	-31.52392	**Longitude:**	28.13723
Photograph						
IHI/PES	**Condition Score**	**Key current impacts**				
	C	Heavy grazing and trampling by cattle, minor erosion.				
EIS Score	Low/Marginal EIS (score of 1.2) with the score being derived from the landscape scale ecological importance due to the relatively good ecological condition of C and the fact that these wetlands fall within a vegetation type that is poorly protected.					
Risks	Low risks associated with the proposed pipeline alignment given that the pipeline will predominantly be located outside of the wetland.					

Table 8: Seep 4 details (crossing T11E-7)

Ngqondo SEEP 4	Crossing No:	T11E-7	Quaternary Catchment	T11E	Map Reference	Figure 8-3
Habitat type	Hillslope Seep Wetland		Latitude:	-31.52522	Longitude:	28.13771
Photograph						
IHI/PES	Condition Score	Key current impacts				
	D	Heavy grazing and trampling by cattle, cultivation within the wetland.				
EIS Score	Low/Marginal EIS (score of 1.2) with the score being derived from the ecological sensitivity given that this is a seep wetland located on a mudstone lithology. It is moderately sensitive to changes in water quality.					
Risks	Moderate risks associated with the proposed pipeline alignment given that the pipeline pass directly through the wetland, causing disturbance to the soil and vegetation. Additionally, given the steep nature of the landscape, the risk of erosion due to uncompacted soil is relatively high, thereby increasing the risk to the wetland.					

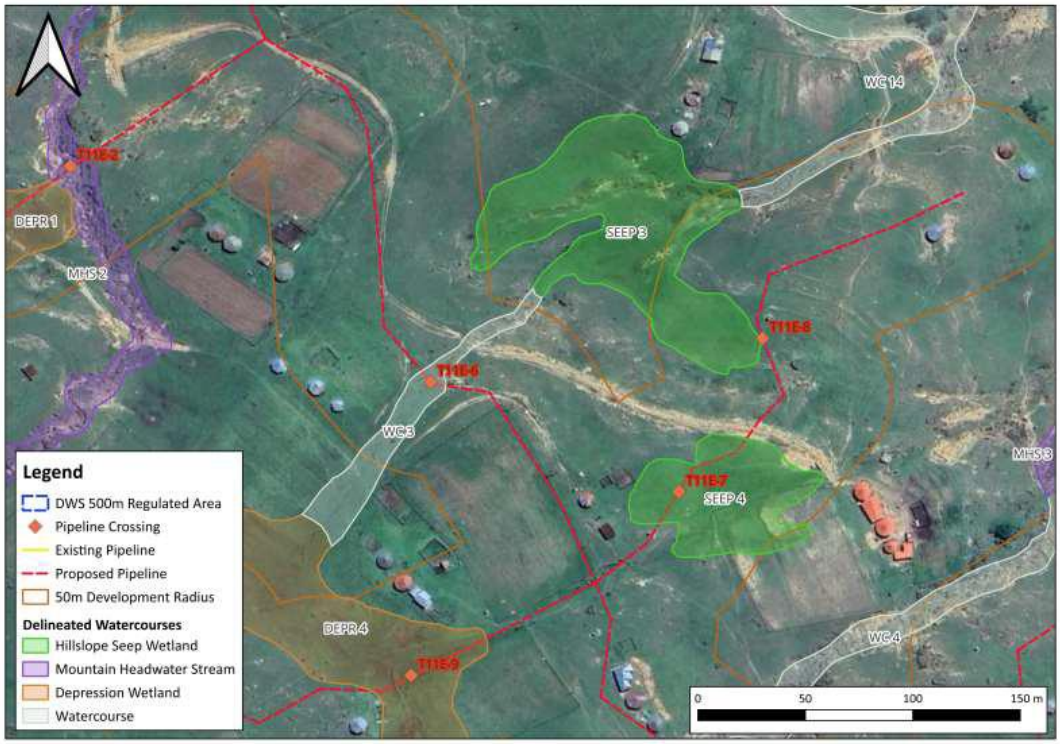

Figure 18: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically SEEP 3, SEEP 4 and WC 3.

Table 9: Seep 5 details (no direct crossing)

Ngqondo SEEP 5	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-4
Habitat type	Hillslope Seep Wetland		Latitude:	-31.52667	Longitude:	28.13980
Photograph						
IHI/PES	Condition Score	Key current impacts				
	C	Heavy grazing and trampling by cattle, minor erosion within the wetland.				
EIS Score	Low/Marginal EIS (score of 1.2) with the score being derived from the landscape scale ecological importance due to the relatively good ecological condition of C and the fact that these wetlands fall within a vegetation type that is poorly protected.					
Risks	Low risks associated with the proposed pipeline alignment given that the pipeline is entirely located outside of the wetland. A low risk exists due to the possible risks associated with the construction phase of the pipeline, given that SEEP 5 is located downslope of the pipeline.					

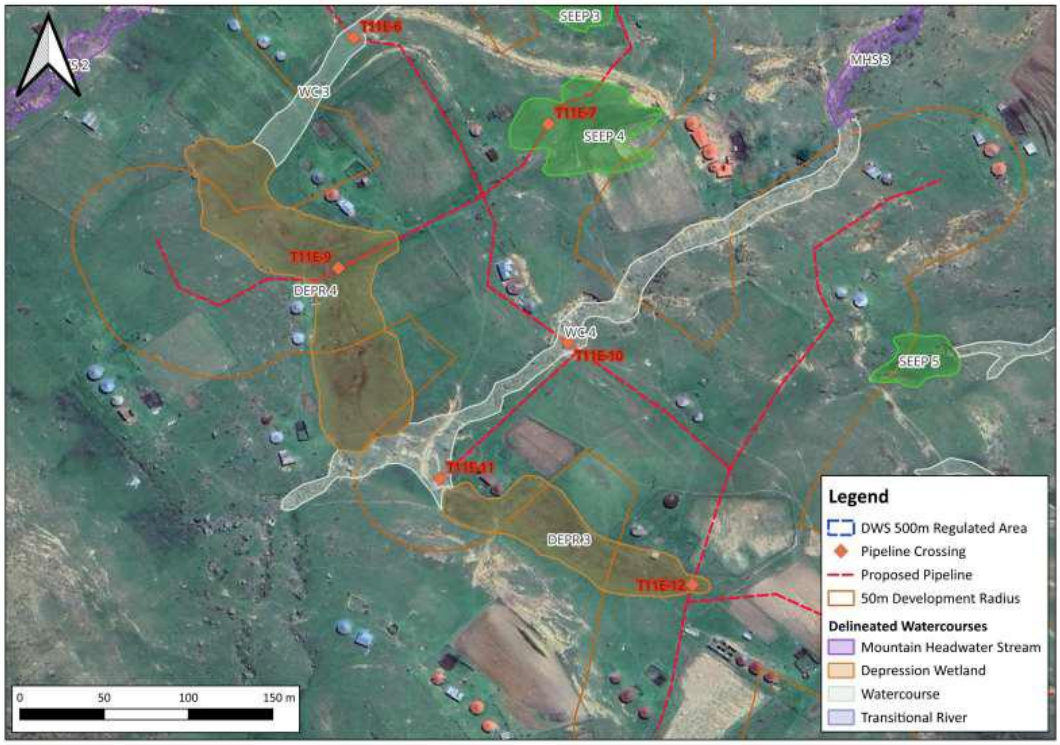

Figure 19: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically SEEP 5, DEPR 3, DEPR 4 and WC 4 (Ellery, 2025).

Table 10: Seep 6 details (crossing T11E-19)

Ngqondo SEEP 6	Crossing No:	T11E-19	Quaternary Catchment	T11E	Map Reference	Figure 8-5
Habitat type	Hillslope Seep Wetland		Latitude:	-31.53355	Longitude:	28.15307
Photograph						
IHI/PES	Condition Score	Key current impacts				
	C	Heavy grazing and trampling by cattle, road crossings across the wetland with limited culverts to allow the transfer of water, old cultivation within the wetland.				
EIS Score	Moderate EIS (score of 1.5) with the score being derived from the landscape scale ecological importance due to the relatively good ecological condition of C, the fact that these wetlands fall within a vegetation type that is poorly protected and this wetland provides a moderate level of habitat diversity at a landscape scale.					
Risks	Moderate to low risks associated with the proposed pipeline alignment given that the pipeline will pass directly through the wetland, but is located along an existing disturbance (i.e. the road). Provided that careful construction measures are followed, the risk should be low. Additionally, the wetland is located on a gentle slope, so the risk of erosion is reduced.					

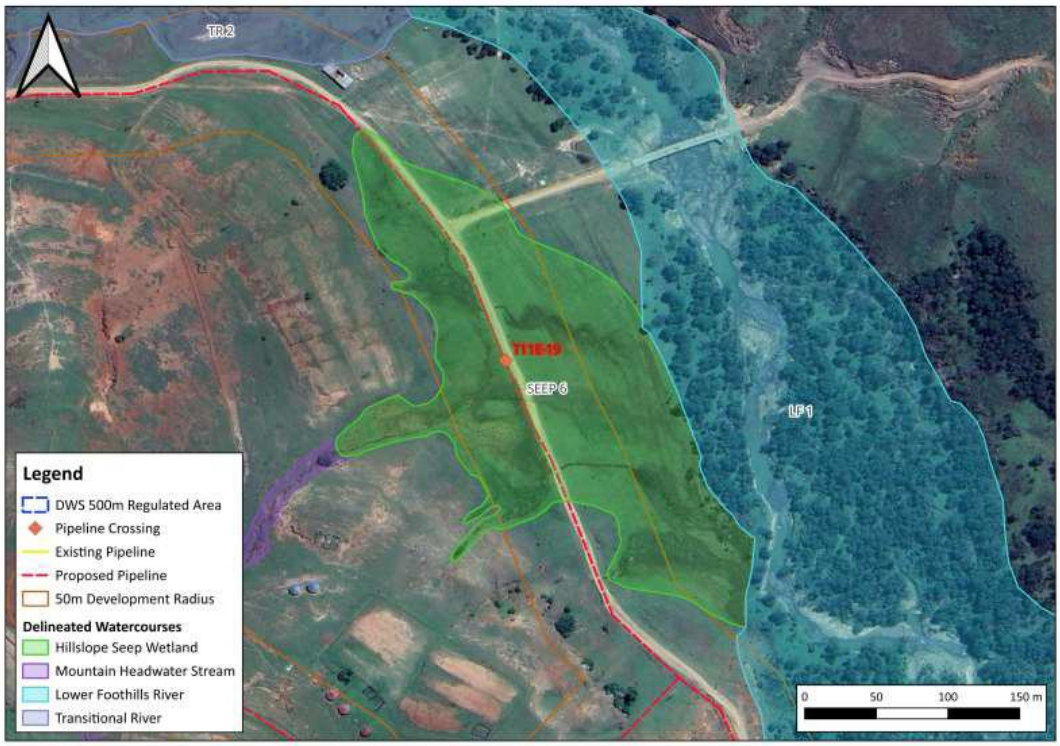

Figure 20: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically SEEP 6 (Ellery, 2025).

Table 11: Seep 7 details (no direct crossing)

Ngqondo SEEP 7	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-6
Habitat type	Hillslope Seep Wetland		Latitude:	-31.52207	Longitude:	28.13906
Photograph	No photograph available					
IHI/PES	Condition Score	Key current impacts				
	C	Heavy grazing and trampling by cattle, minor erosion within the wetland.				
EIS Score	Low/Marginal EIS (score of 1.2) with the score being derived from the landscape scale ecological importance due to the relatively good ecological condition of C and the fact that these wetlands fall within a vegetation type that is poorly protected.					
Risks	Low risks associated with the proposed pipeline alignment given that the pipeline is entirely located outside of the wetland. A low risk exists due to the possible risks associated with the construction phase of the pipeline, given that SEEP 7 is located downslope of the pipeline.					

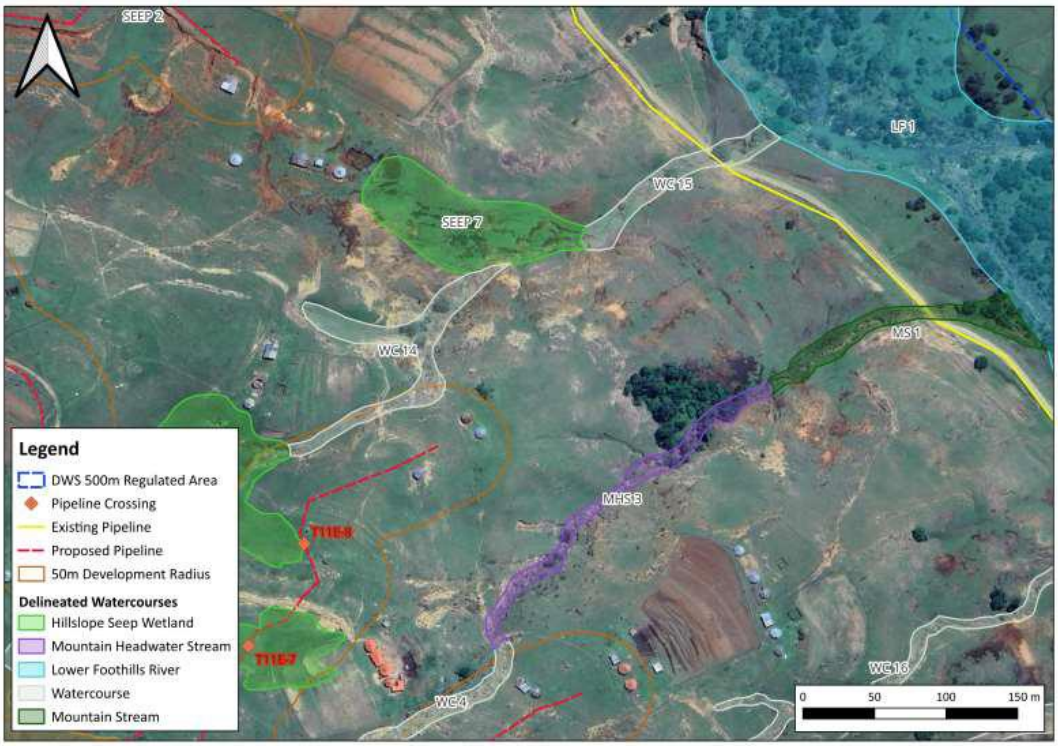

Figure 21: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically SEEP 7, MHS 3, MS 1, WC 14 and WC 15 (Ellery, 2025).

Table 12: Depression 1 details (crossing T11E-3)

Ngqondo DEPR 1	Crossing No:	T11E-3	Quaternary Catchment	T11E	Map Reference	Figure 8-7
Habitat type	Depression Wetland		Latitude:	-31.52379	Longitude:	28.13314
Photo and Map						
IHI/PES	Condition Score	Key current impacts				
	D	Heavy grazing and trampling by cattle, goats and sheep, cultivation within the wetland and severe modification of vegetation assemblage				
EIS Score	Moderate EIS (score of 1.7) with the score being derived from the ecological sensitivity of the wetland due to it being a depression wetland located on a mudstone lithology. Depression wetlands are typically more sensitive to changes in water quality than other HGM units.					
Risks	Moderate risks associated with the proposed pipeline alignment given that the pipeline will pass directly through the eastern arm of the wetland, and hug the southern side of the wetland closely. The crossing point is located on a very steep slope and will likely result in erosion within the wetland.					

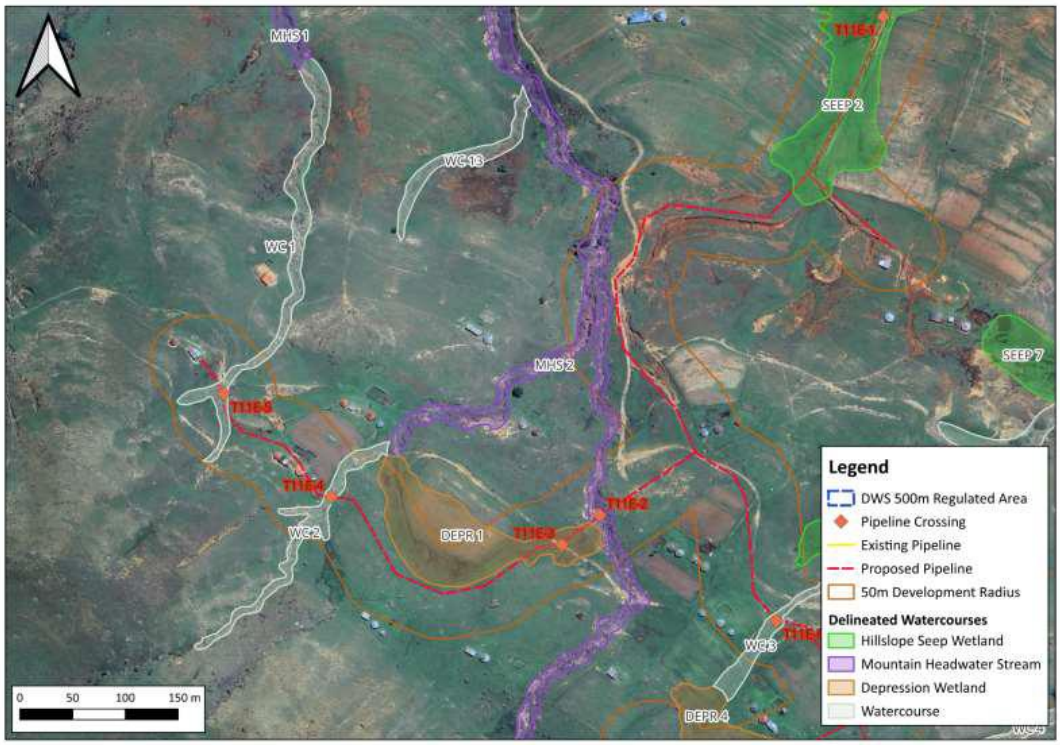

Figure 22: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically DEPR 1, WC 1, WC 2 and WC 13.

Table 13: Depression 2 details (crossing T11E-18)

Ngqondo DEPR 2	**Crossing No:**	T11E-18	**Quaternary Catchment**	T11E	**Map Reference**	Figure 8-8
Habitat type	Depression Wetland		**Latitude:**	-31.53713	**Longitude:**	28.14233
Photograph						
IHI/PES	**Condition Score**	**Key current impacts**				
	C	Moderate grazing and trampling by goats and sheep, minor erosion within the wetland.				
EIS Score	Moderate EIS (score of 1.7) with the score being derived from the ecological sensitivity of the wetland due to it being a depression wetland located on a mudstone lithology. Depression wetlands are typically more sensitive to changes in water quality than other HGM units.					
Risks	Moderate risks associated with the proposed pipeline alignment given that the pipeline will pass directly through the wetland. Given the small nature extent of this wetland, the overall impact of the pipeline construction will likely be disproportionately large in contrast to the expected impacts and risks associated with larger wetlands.					

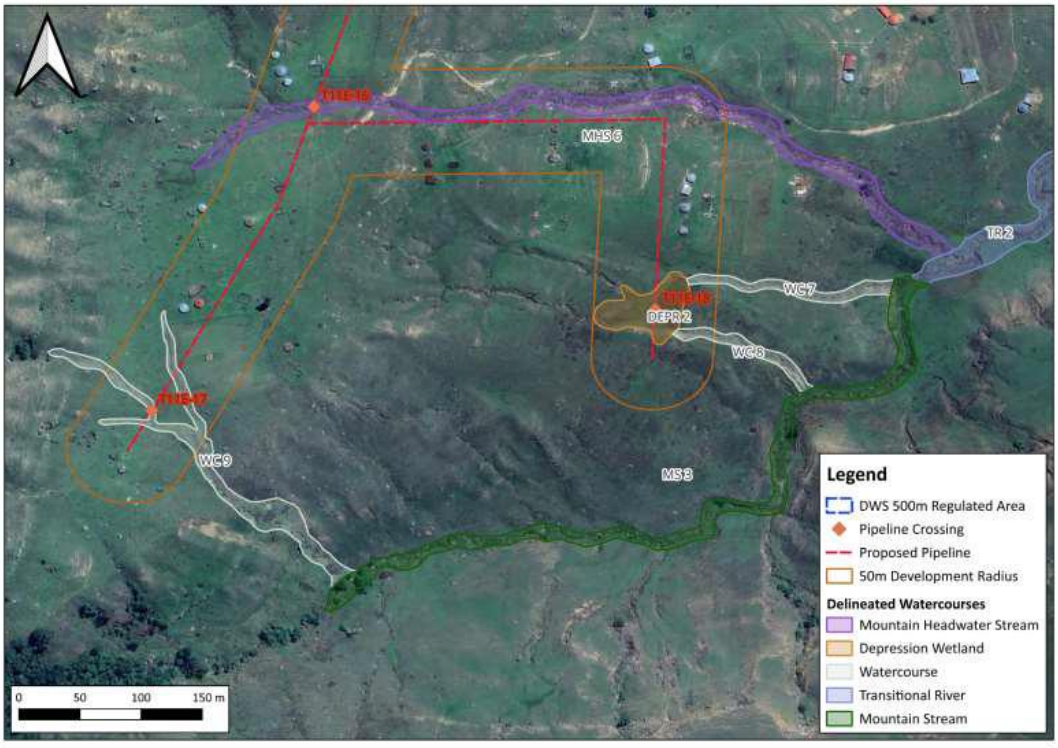

Figure 23: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically DEPR 2, WC 7, WC 8, WC 9, MHS 6 and MS 3.

Table 14: Depression 3 details (crossing T11E-12)

Ngqondo DEPR 3	Crossing No:	T11E-12	Quaternary Catchment	T11E	Map Reference	Figure 8-4
Habitat type	Depression Wetland		Latitude:	-31.52778	Longitude:	28.13762
Photograph						
IHI/PES	Condition Score	Key current impacts				
	C	Moderate grazing and trampling by goats and sheep, minor erosion within the wetland.				
EIS Score	Moderate EIS (score of 1.7) with the score being derived from the ecological sensitivity of the wetland due to it being a depression wetland located on a mudstone lithology. Depression wetlands are typically more sensitive to changes in water quality than other HGM units.					
Risks	Moderate risks associated with the proposed pipeline alignment given that the pipeline will pass directly through the eastern edge of the wetland. The crossing point is located on a steep slope and will likely result in erosion within the wetland.					

Table 15: Depression 4 details (crossing T11E-9)

Ngqondo DEPR 4	Crossing No:	T11E-9	Quaternary Catchment	T11E	Map Reference	Figure 8-4
Habitat type	Depression Wetland		Latitude:	-31.52623	Longitude:	28.13603
Photograph						
IHI/PES	Condition Score	Key current impacts				
	D	Moderate grazing and trampling by cattle, goats and sheep, cultivation within the wetland and some infilling associated with some housing developments within the wetland.				
EIS Score	Moderate EIS (score of 1.7) with the score being derived from the ecological sensitivity of the wetland due to it being a depression wetland located on a mudstone lithology. Depression wetlands are typically more sensitive to changes in water quality than other HGM units.					
Risks	Moderate risks associated with the proposed pipeline alignment given that the pipeline will pass directly through the central portion of the wetland. The crossing point is located on a steep slope and will likely result in erosion within the wetland.					

Table 16: Channelled-valley bottom 1 detail (crossing T11E-24)

Ngqondo CVB 1	**Crossing No:**	T11E-24	**Quaternary Catchment**	T11E	**Map Reference**	Figure 8-9
Habitat type	Channelled Valley-Bottom Wetland		**Latitude:**	-31.54878	**Longitude:**	28.15606
Photograph						
IHI/PES	**Condition Score**	**Key current impacts**				
	C	Moderate grazing and trampling by cattle, goats and sheep, infilling associated with a minor road crossing and a small head cut at the toe of the wetland.				
EIS Score	Moderate EIS (score of 2.0) with the score being derived from the ecological sensitivity of the wetland due to it being a channelled valley-bottom wetland and it being sensitive to changes in flood regimes. Channelled valley-bottom wetlands are typically more sensitive to changes in flooding than most other HGM units as their hydrological operating rules are reliant of flooding .					
Risks	Moderate risks associated with the proposed pipeline alignment given that the pipeline will pass directly through the central portion of the wetland. The crossing point is located on a steep slope and will likely result in erosion within the wetland.					

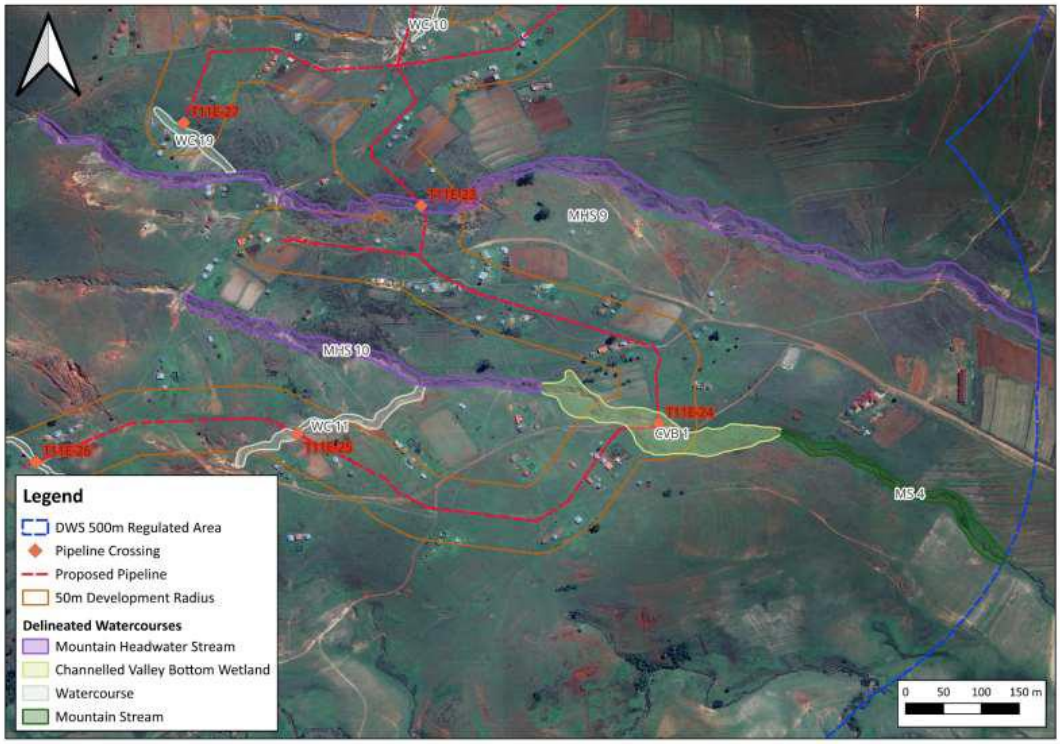

Figure 24: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically CVB 1, MHS 9, MHS 10, MS 4, WC 11 (Ellery, 2025).

Table 17: Mountain headwater stream 1 (no direct crossing)

Ngqondo MHS 1	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-10
Habitat type	Mountain Headwater Stream		Latitude:	-31.51834	Longitude:	28.13145
Photograph	No photograph available					
IHI/PES	Condition Score		Key current impacts			
	A/	B	Minor channel and bed modification due to erosion in the stream system with moderate bank erosion.			
EIS Score	Low/Marginal EIS (score of 1.0). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

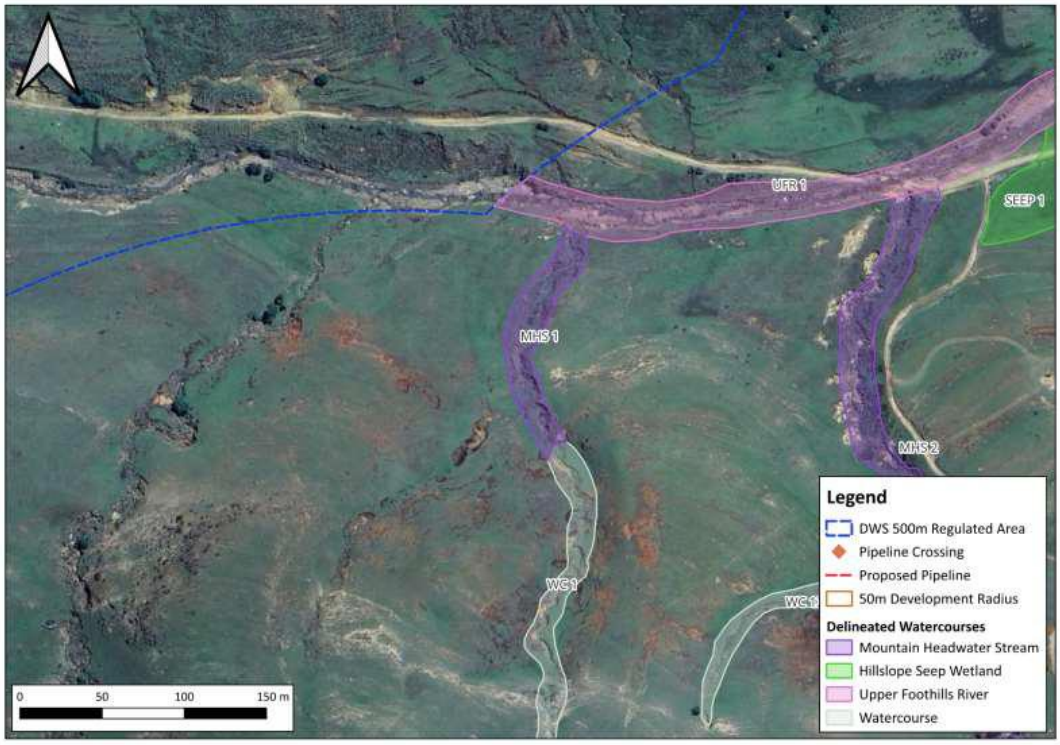

Figure 25: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically MHS 1.

Table 18: Mountain headwater stream 2 (crossing T11E-2)

Ngqondo MHS 2	Crossing No:	T11E-2	Quaternary Catchment	T11E	Map Reference	Figure 8-11
Habitat type	Mountain Headwater Stream		Latitude:	-31.52153	Longitude:	28.13400
Photograph						
IHI/PES	Condition Score		Key current impacts			
	A/	B	Minor channel and bed modification due to erosion in the stream system with moderate bank erosion. Introduction of a few invasive alien species			
EIS Score	Low/Marginal EIS (score of 1.2). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low to moderate risks associated with the proposed development given that the pipeline alignments cross this stream at a single point along its length, and the proposed crossing point is located on a bedrock shelf which will protect the system from erosion.					

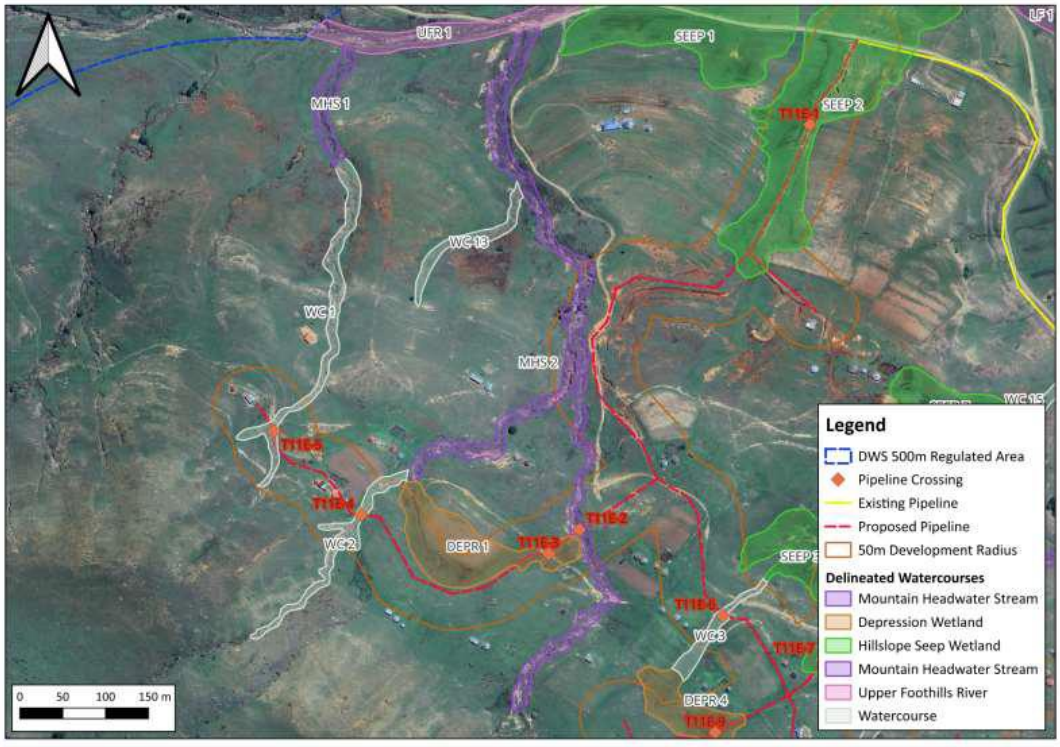

Figure 26: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically MHS 2 (Ellery, 2025).

Table 19: Mountain headwater stream 3 (no direct crossing)

Ngqondo MHS 3	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-6
Habitat type	Mountain Headwater Stream		Latitude:	-31.52411	Longitude:	28.14259
Photograph	No photograph available					
IHI/PES	Condition Score		Key current impacts			
	A/	B	Minor channel and bed modification due to erosion in the stream system with moderate bank erosion. Introduction of a few invasive alien species			
EIS Score	Low/Marginal EIS (score of 1.1). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 20: Mountain headwater stream 4 (no direct crossing)

Ngqondo MHS 4	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-12
Habitat type	Mountain Headwater Stream		Latitude:	-31.53039	Longitude:	28.14079
Photograph	No photograph available					
IHI/PES	Condition Score		Key current impacts			
	A/	B	Minor channel and bed modification due to erosion and a road crossing at the toe of the stream.			
EIS Score	Low/Marginal EIS (score of 0.9). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

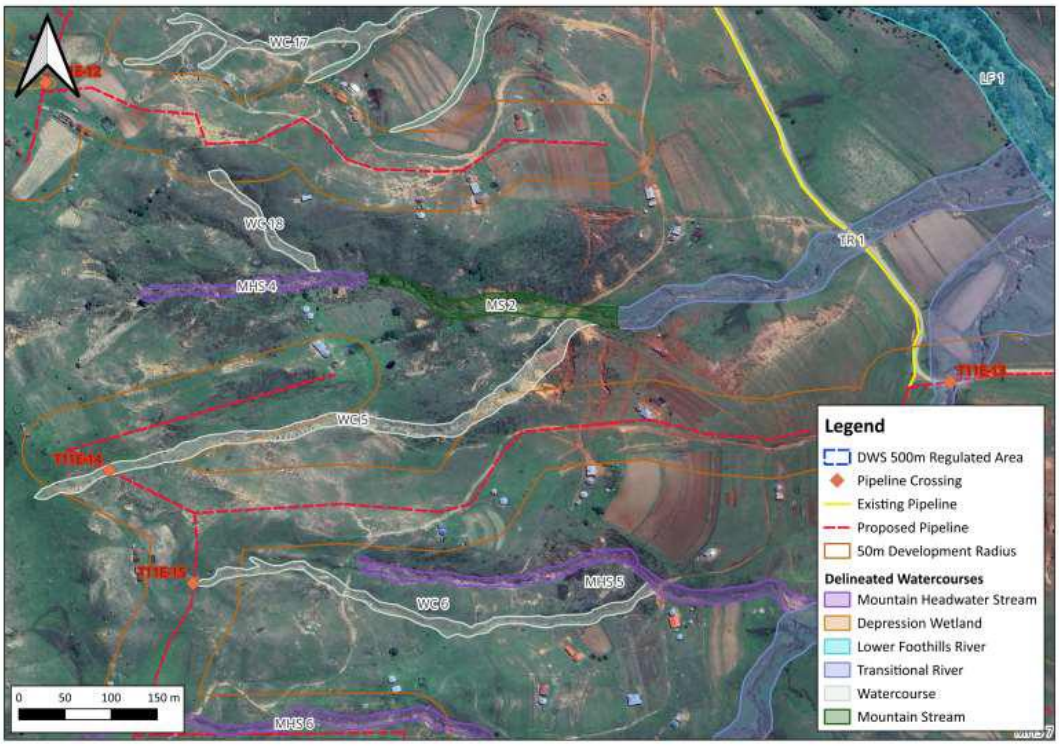

Figure 27: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically MHS 4, MHS 5, MHS6, MS 2, WC 5, WC 6, WC 18, TR 1.

Table 21: Mountain headwater stream 5 (no direct crossing)

Ngqondo MHS 5	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-12
Habitat type	Mountain Headwater Stream		Latitude:	-31.53376	Longitude:	28.14477
Photograph	No photograph available					
IHI/PES	Condition Score	Key current impacts				
	A/B	Minor channel and bed modification due to erosion and a road crossing at the toe of the stream.				
EIS Score	Low/Marginal EIS (score of 0.9). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 22: Mountain headwater stream 6 (crossing T11E-16)

Ngqondo MHS 6	Crossing No:	T11E-16	Quaternary Catchment	T11E	Map Reference	Figure 8-8
Habitat type	Mountain Headwater Stream		Latitude:	-31.53563	Longitude:	28.14194
Photograph						
IHI/PES	Condition Score	Key current impacts				
	A/B	Minor channel and bed modification due to erosion and a road crossing near the head of the stream. Some bank modification was evident from adjacent agricultural activities.				
EIS Score	Low/Marginal EIS (score of 0.9). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Moderate to high risks associated with the proposed development given that the pipeline will cross the system once near its head and will run parallel to the stream for a long stretch of stream, in quite close proximity. Risks related to the construction and operation of the pipeline are present.					

Table 23: Mountain headwater stream 7 (crossing T11E-20)

Ngqondo MHS 7	Crossing No:	T11E-20	Quaternary Catchment	T11E	Map Reference	Figure 8-13
Habitat type	Mountain Headwater Stream		Latitude:	-31.53509	Longitude:	28.15051
Photograph						
IHI/PES	Condition Score	Key current impacts				
	B	Minor channel and bed modification due to erosion and sedimentation from an extensive gully upstream of the stream. Introduction of invasive alien plants.				
EIS Score	Low/Marginal EIS (score of 0.8). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Moderate risks associated with the proposed development given that the pipeline will cross the system once near its head. The stream is on a steep slope and there are already erosional issues affecting the stream, meaning any further disturbance could exacerbate the transport of sediment into the stream.					

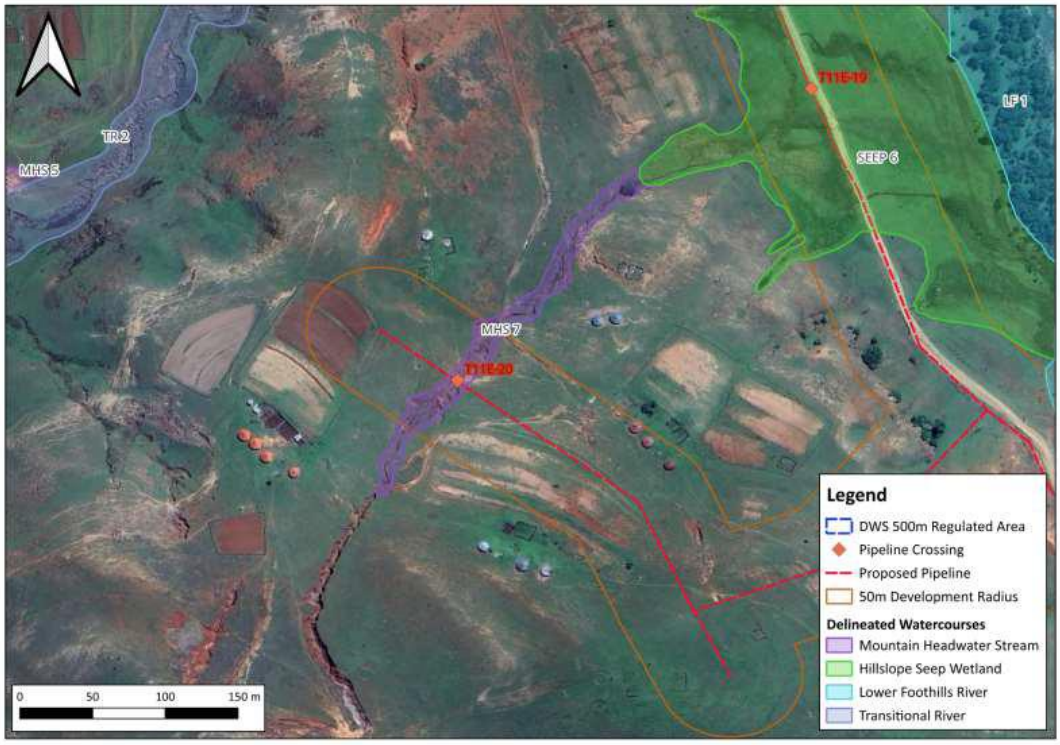

Figure 28: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically MHS 7 (Ellery, 2025).

Table 24: Mountain headwater stream 8 (crossing T11E-21).

Ngqondo MHS 8	Crossing No:	T11E-21	Quaternary Catchment	T11E	Map Reference	Figure 8-14
Habitat type	Mountain Headwater Stream		Latitude:	-31.53970	Longitude:	28.15632
Photograph						
IHI/PES	Condition Score: A/ B		Key current impacts: Minor channel and bed modification due to the road crossing near the toe of the stream which has resulted in some erosion downstream. Additionally, the disturbance has likely resulted in the proliferation of *Acacia mearnsii* below the road crossing.			
EIS Score	Low/Marginal EIS (score of 0.9). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Moderate to high risks associated with the proposed development given that the pipeline will cross the system once near its head and will run parallel to the stream for a long stretch of stream, in quite close proximity. Risks related to the construction and operation of the pipeline are present.					

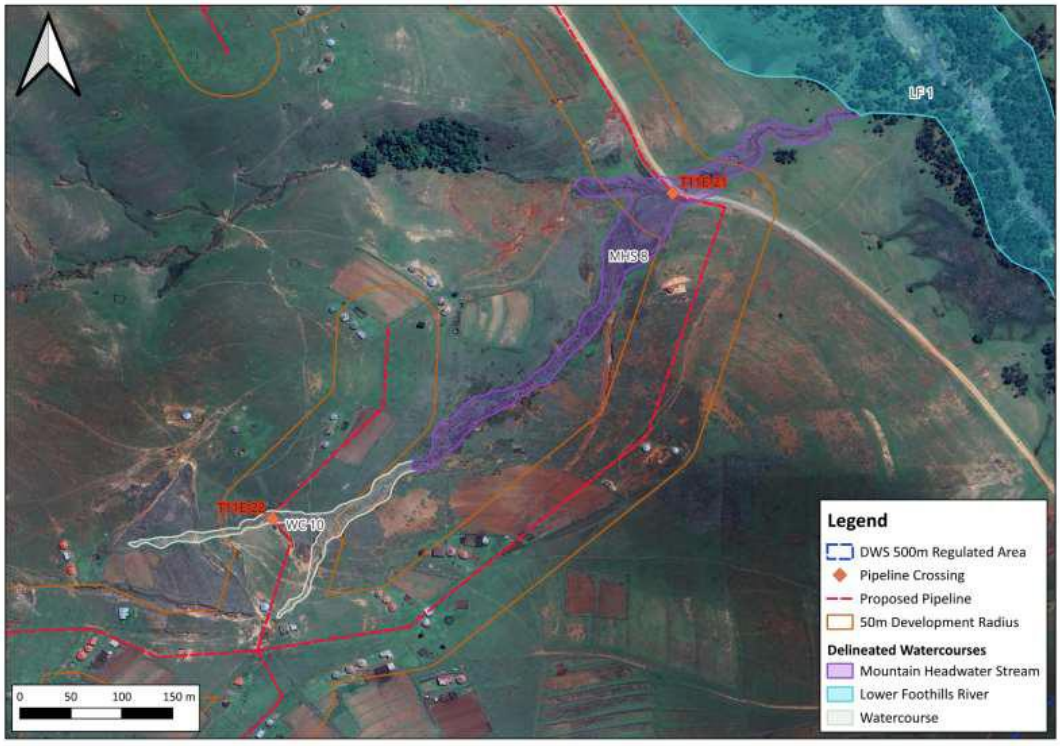

Figure 29: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically MHS 8 and WC 10 (Ellery, 2025).

Table 25: Mountain headwater stream 9 (crossing T11E-23)

Ngqondo MHS 9	Crossing No:	T11E-23	Quaternary Catchment	T11E	Map Reference	Figure 8-9
Habitat type	Mountain Headwater Stream		Latitude:	-31.54587	Longitude:	28.15513
Photograph						
IHI/PES	Condition Score		Key current impacts			
	A/	B	Minor bed modification due to erosion in the catchment and resultant sedimentation in the stream. The channel and banks have also been slightly eroded due to cattle action in the stream.			
EIS Score	Low/Marginal EIS (score of 1.1). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Moderate risks associated with the proposed development given that the pipeline will cross the system once near its head and will run parallel to the stream for a moderate stretch of stream. Risks related to the construction and operation of the pipeline are present.					

Table 26: Mountain headwater stream 10 (no direct crossing)

Ngqondo MHS 10	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-9
Habitat type	Mountain Headwater Stream		Latitude:	-31.54775	Longitude:	28.15177
Photograph	No photograph available					
IHI/PES	Condition Score		Key current impacts			
	A/	B	Minor bed modification due to erosion in the catchment and resultant sedimentation in the stream. The channel and banks have also been slightly eroded due to cattle action in the stream.			
EIS Score	Low/Marginal EIS (score of 0.9). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 27: Upper foothills river 1 (no direct crossing)

Ngqondo UFR 1	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-2
Habitat type	Upper Foothills River		Latitude:	-31.51682	Longitude:	28.13678
Photograph						
IHI/PES	Condition Score	Key current impacts				
	B	Minor bed and bank modification due to the construction of a road crossing through the stream. This has resulted in artificial channel widening downstream and the moderate destruction of rapid and riffles in these areas thereby affecting aquatic fauna. Additionally, low levels of invasive alien species were observed in the riparian area.				
EIS Score	Moderate EIS (score of 2.2). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River as well as the fact that it forms a key part of the fish support corridor associated with the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 28: Mountain stream 1 (no direct crossing)

Ngqondo MS 1	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-6
Habitat type	Mountain Stream		Latitude:	-31.52289	Longitude:	28.14233
Photograph	No photograph available					
IHI/PES	Condition Score	Key current impacts				
	B	Minor bed and bank modification due to the construction of a road crossing through the stream. This has resulted in artificial channel widening both downstream and upstream. Additionally, low levels of invasive alien species were observed in the riparian area at the toe of the stream.				
EIS Score	Low/Marginal EIS (score of 1.0). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 29: Mountain stream 2 (no direct crossing)

Ngqondo MS 2	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-12
Habitat type	Mountain Stream		Latitude:	-31.53061	Longitude:	28.14359
Photograph	No photograph available					
IHI/PES	Condition Score	Key current impacts				
	A/ B	Minor bed modification due to erosion in the catchment and resultant sedimentation in the stream. The channel and banks have also been slightly eroded due to cattle action in the stream.				
EIS Score	Low/Marginal EIS (score of 1.0). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 30: Mountain stream 3 (no direct crossing)

Ngqondo MS 3	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-8
Habitat type	Mountain Stream		Latitude:	-31.53854	Longitude:	28.14259
Photograph						
IHI/PES	Condition Score		Key current impacts			
	A/ B		Minor bed modification due to erosion in the catchment and resultant sedimentation in the stream. The channel and banks have also been slightly eroded due to cattle action in the stream. The channel is also incised due to large landscape scale geomorphic processes occurring downstream.			
EIS Score	Low/Marginal EIS (score of 1.2). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 31: Mountain stream 4 (no direct crossing)

Ngqondo MS 4	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-9
Habitat type	Mountain Stream		Latitude:	-31.54974	Longitude:	28.15961
Photograph	No photograph available					
IHI/PES	Condition Score		Key current impacts			
	A/ B		Minor bed modification due to erosion in the catchment and resultant sedimentation in the stream. The channel is also incised due to large landscape scale geomorphic processes occurring downstream.			
EIS Score	Low/Marginal EIS (score of 1.0). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 32: Transitional River 1 (no direct crossing)

Ngqondo TR 1	Crossing No:	N/A	Quaternary Catchment	T11E	Map Reference	Figure 8-12
Habitat type	Transitional River		Latitude:	-31.52986	Longitude:	28.14760
Photograph						
IHI/PES	Condition Score	Key current impacts				
	B	Minor to moderate channel modification from the construction of the road crossing and associated culverts. This has led to channel incision and bank erosion. Additionally, the narrow riparian area has been modified to cultivation.				
EIS Score	Low/Marginal EIS (score of 1.4). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

Table 33: Transitional River 2 (crossing T11E-13)

Ngqondo TR 2	Crossing No:	T11E-13	Quaternary Catchment	T11E	Map Reference	Figure 8-15
Habitat type	Transitional River		Latitude:	-31.53197	Longitude:	28.14891
Photograph						
IHI/PES	Condition Score	Key current impacts				
	B	Minor to moderate channel modification from the construction of the road crossing and associated culverts. This has led to channel incision and bank erosion and the abandonment of an old channel in favour of a straightened channel. Additionally, the riparian area has been modified to cultivation.				
EIS Score	Low/Marginal EIS (score of 1.4). The score is derived from the ecological importance of the stream given it is a tributary of the Mbashe River.					
Risks	Moderate to low risks associated with the proposed pipeline alignment given that the pipeline will pass directly through the wetland, but is located along an existing disturbance (i.e. the road). Provided that careful construction measures are followed, the risk should be low. Additionally, the wetland is located on a gentle slope, so the risk of erosion is reduced.					

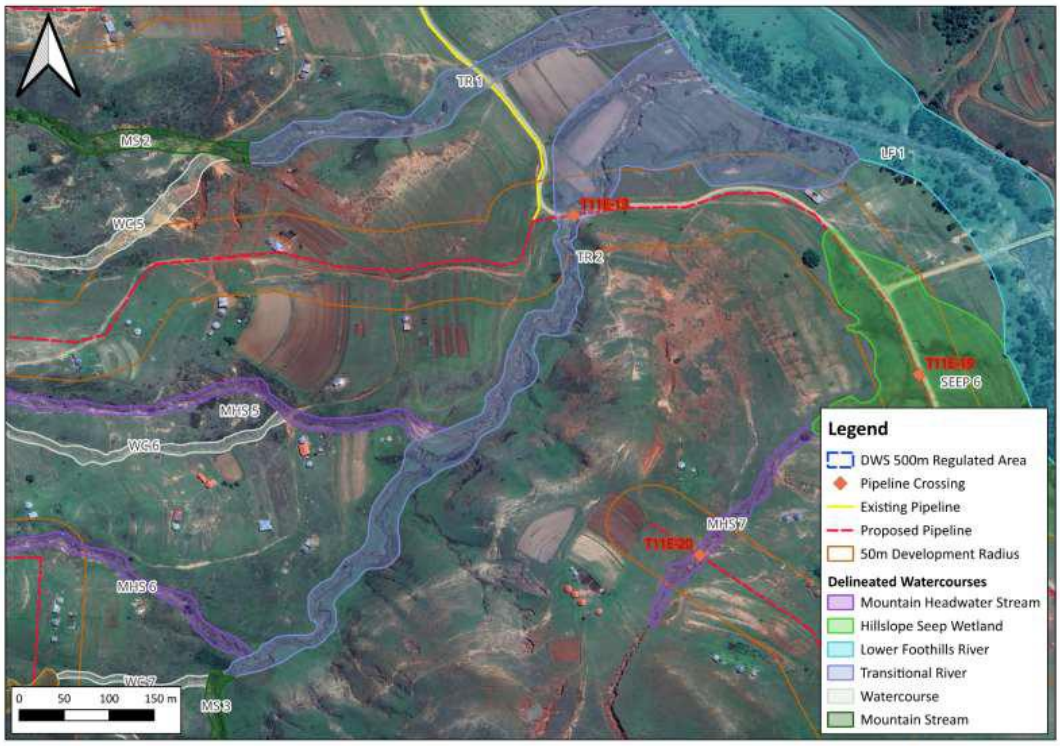

Figure 30: The proposed pipeline alignments in relation to the delineated aquatic ecosystems, specifically TR 2 (Ellery, 2025).

Table 34: Lower foothills river 1 (no direct crossing)

Ngqondo LF 1	**Crossing No:**	N/A	**Quaternary Catchment**	T11E	**Map Reference**	Figure 8-16
Habitat type	Lower Foothills River		**Latitude:**	-31.53022	**Longitude:**	28.15172
Photograph						
	Condition Score	**Key current impacts**				
IHI/PES	C	Moderate levels of degradation have occurred as a result of extensive invasive alien plant proliferation within the riparian area which is the main contributing factor to the decline in overall habitat integrity. Furthermore, sedimentation and slight modification of the bed and banks have occurred due to the increased sedimentation rates in the catchment.				
EIS Score	High EIS (score of 3.5). The score is derived from a variety of important taxa ranging from fish to aquatic invertebrates. Additionally, the river is deemed to be highly sensitive to changes in flow regimes given that many of the important taxa (both faunal and floral) are sensitive to changes in low flow conditions.					
Risks	Low risks associated with the proposed development given that the pipeline alignments will not cross this stream system at all. A low risk exists because the pipeline is located in the catchment of the stream system.					

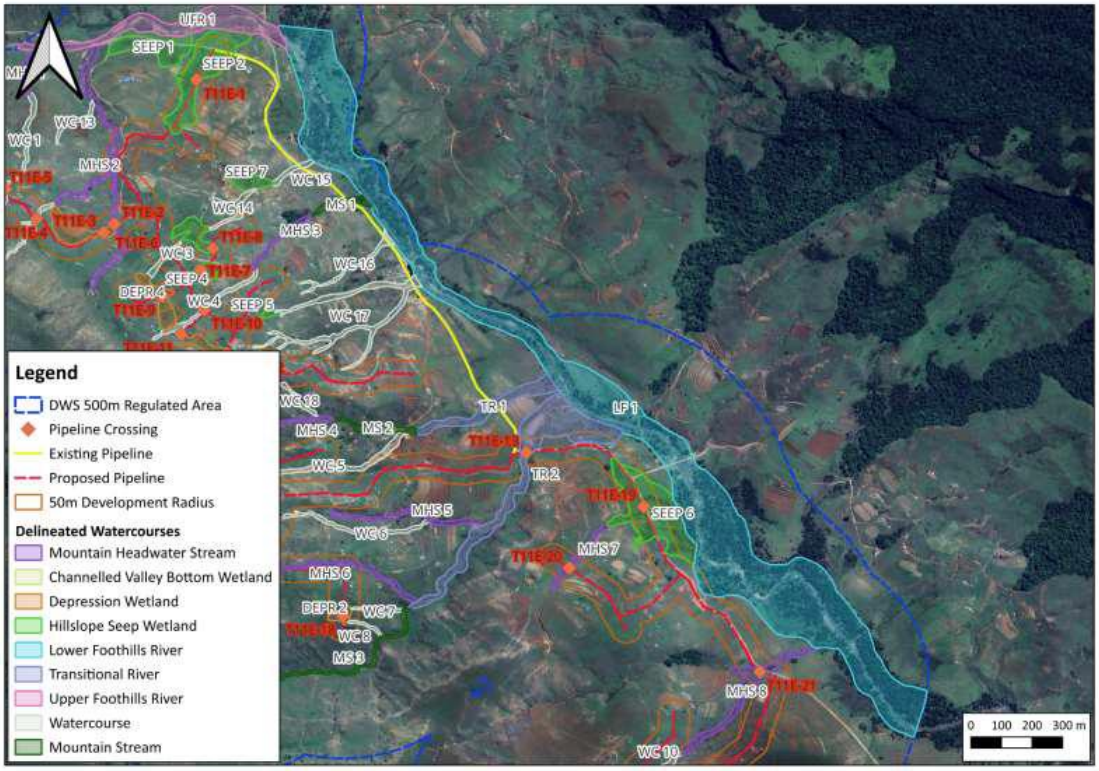

Figure 31: The proposed pipeline alignments in relation to the delineated freshwater ecosystems, specifically LF 1.

Table 35: Summary of the watercourses present onsite, their relevant crossing numbers and broad risk statements (Ellery, 2025).

Watercourse Code	Crossing Number	Map Reference	Risks
WC 1	T11E-5	Figure 8-7	Low to moderate risks associated with construction and operational phase.
WC 2	T11E-4	Figure 8-7	Low to moderate risks associated with construction and operational phase.
WC 3	T11E-6	Figure 8-3	Low to moderate risks associated with construction and operational phase.
WC 4	T11E-10	Figure 8-4	Low to moderate risks associated with construction and operational phase.
WC 5	T11E-14	Figure 8-12	Low to moderate risks associated with construction and operational phase.
WC 6	T11E-15	Figure 8-12	Low to moderate risks associated with construction and operational phase.
WC 7	N/A	Figure 8-8	Low risks associated with construction and operation of pipeline in the catchment
WC 8	N/A	Figure 8-8	Low risks associated with construction and operation of pipeline in the catchment
WC 9	T11E-17	Figure 8-8	Low to moderate risks associated with construction and operational phase.
WC 10	T11E-22	Figure 8-14	Low to moderate risks associated with construction and operational phase.
WC 11	T11E-25	Figure 8-9	Low to moderate risks associated with construction and operational phase.
WC 12	T11E-12	Figure 8-17	Low to moderate risks associated with construction and operational phase.
WC 13	N/A	Figure 8-7	Low risks associated with construction and operation of pipeline in the catchment
WC 14	N/A	Figure 8-6	Low risks associated with construction and operation of pipeline in the catchment
WC 15	N/A	Figure 8-6	Low risks associated with construction and operation of pipeline in the catchment
WC 16	N/A	Figure 8-16	Low risks associated with construction and operation of pipeline in the catchment
WC 17	N/A	Figure 8-16	Low risks associated with construction and operation of pipeline in the catchment
WC 18	N/A	Figure 8-12	Low risks associated with construction and operation of pipeline in the catchment
WC 19	T11E-27	Figure 8-9	Low to moderate risks associated with construction and operational phase.

19.2.4.4. Resource Quality Objectives and the Recommended Ecological Category

The management objective for any watercourse is set by considering the pre-development PES and the EIS of the given watercourse. The Mbashe River does have resource quality objectives set for it, but the reach for which these RQOs have been set is located within the T11H catchment and does not coincide with this study area. Therefore, the reach of the Mbashe River and the catchments wherein the delineated watercourses lie do not have resource quality objectives prescribed for them. Therefore, individual REC's will be set for the 29 aquatic ecosystems across the site. Following the Rountree et al. (2013) method, all the systems except the Mbashe River itself will have to be maintained in their current PES category, considering that their EIS categories ranged from ***Low*** to ***Moderate***. However, given that the Mbashe River has a ***High*** EIS and is in a C PES category, according to the Rountree et al (2013) method, the Mbashe River has a REC of B.

Table 36: Summary of the RECs for the aquatic ecosystems located onsite

Aquatic Ecosystem Code	EIS	PES	REC
SEEP 1	Moderate	C	C
SEEP 2	Moderate	D	D
SEEP 3	Moderate	C	C
SEEP 4	Moderate	D	D
SEEP 5	Moderate	C	C
SEEP 6	Moderate	C	C
SEEP 7	Moderate	C	C
DEPR 1	Moderate	D	D
DEPR 2	Moderate	C	C
DEPR 3	Moderate	C	C
DEPR 4	Moderate	D	D
CVB 1	Moderate	C	C
MHS 1	Low/Marginal	A/ B	A/ B
MHS 2	Low/Marginal	A/ B	A/ B
MHS 3	Low/Marginal	A/ B	A/ B
MHS 4	Low/Marginal	A/ B	A/ B
MHS 5	Low/Marginal	A/ B	A/ B
MHS 6	Low/Marginal	A/ B	A/ B
MHS 7	Low/Marginal	B	B
MHS 8	Low/Marginal	A/ B	A/ B
MHS 9	Low/Marginal	A/ B	A/ B
MHS 10	Low/Marginal	A/ B	A/ B
MS 1	Low/Marginal	B	B
MS 2	Low/Marginal	A/ B	A/ B
MS 3	Low/Marginal	A/ B	A/ B
MS 4	Low/Marginal	A/ B	A/ B
TR 1	Low/Marginal	B	B
TR 2	Low/Marginal	B	B
UFR 1	Moderate	B	B
LF 1	High	C	B

19.2.4.5. Buffer Requirements

Generally, buffers are adopted to protect aquatic ecosystems from physical disturbance and to protect the water resource from pollution from the adjacent landscape. The aquatic ecosystems within the study site have generally been slightly to moderately modified, with the alteration of the systems' integrity associated with current and historical disturbances. As such the buffer distances are largely associated with the buffer functions that contribute towards protecting the water resource rather than biodiversity. The width of a buffer is determined by the type of development proposed, which in this case has been classified as a service infrastructure development of pipelines for the transportation of clean water.

It should be noted that a core assumption about buffer zones is that *they will not be utilised for anything other than providing buffering capacity.* However, given the rural nature of the environment and the complex land tenure and land use agreements, this assumption does not stand and therefore has been factored into the buffer assessment. Initially the buffers were derived for the onsite aquatic ecosystem habitat using 'The Estuary, River and Wetland Buffer Guidelines' model (McFarlane & Bredin, 2017) and were based on the characteristics of the aquatic ecosystems, the potential impacts associated with the proposed development and the characteristics of the derived buffer zones. An unmitigated buffer assessment was undertaken to show the buffer requirements should a poor mitigation scenario be adopted by the developer for both the construction and operation phases of the development. Additionally, a mitigated buffer assessment was undertaken to show the buffer requirements should a best-case mitigation scenario be adopted by the developer. Detailed recommendations for the management and maintenance of the buffer areas have been provided in **Section 9** of the specialist report and will be provided further along in this report.

As visualised in **Figure 33**, **Figure 34** and **Figure 35**, and presented in **Table 39,** the buffer for the proposed development is split up between the construction and the operation phases. There was no difference between the poor mitigation and the best-case mitigation scenarios and therefore the buffer areas have been consolidated into one buffer zone per phase. Furthermore, given the extensive number of ecosystems, and taking a pragmatic approach to defining buffer zones for so many systems, a general construction buffer zone and a general operational buffer zone has been applied to all ecosystems. This will reduce the possible confusion and administration for the contractor and the environmental control officer while implementing onsite. The buffer zones can be considered as being 'conservative' (i.e. they are possibly wider than necessary), but it is the opinion of the specialist that, given the steep nature of the landscape, it is better to be cautious. While the development poses both **Low** and **Moderate** risks to the ecosystems, it is recommended that appropriate mitigation activities are adopted.

Table 37: Recommended buffer distance to be adopted for the aquatic ecosystems present within the development footprint

Aquatic Ecosystem	Buffer Distance per Phase	
	Construction	Operational
All aquatic ecosystems	28m	15m

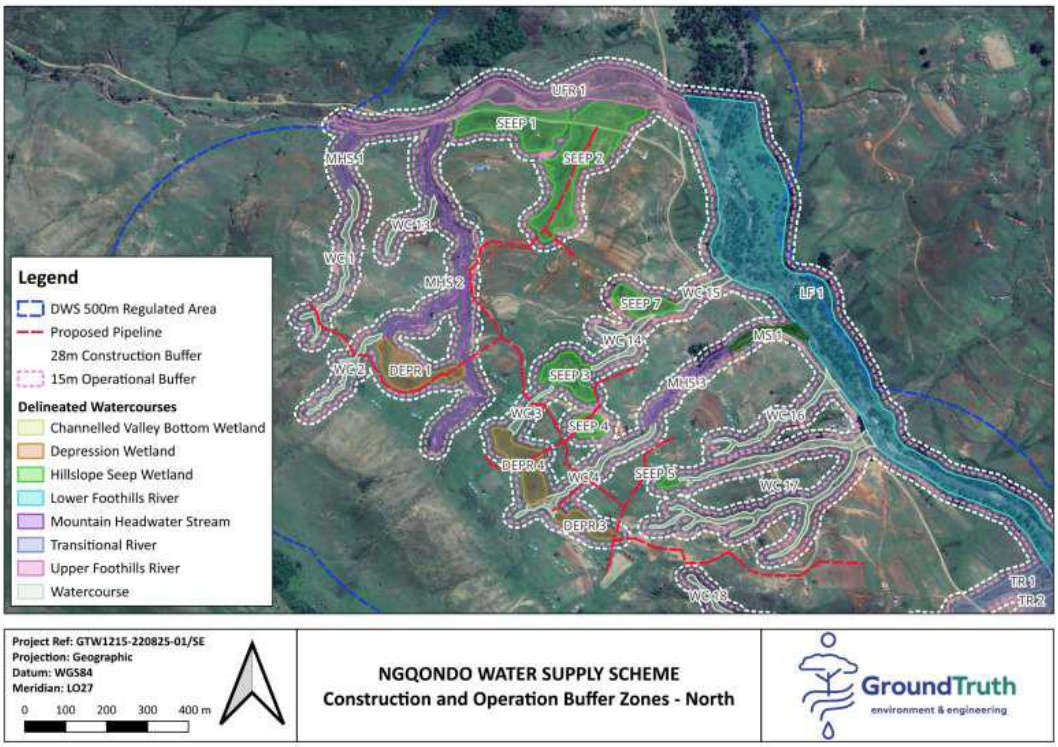

Figure 32: Results of the aquatic ecosystem buffer zone assessment for the construction and operation phase for the northern portion of the study area (Ellery, 2025).

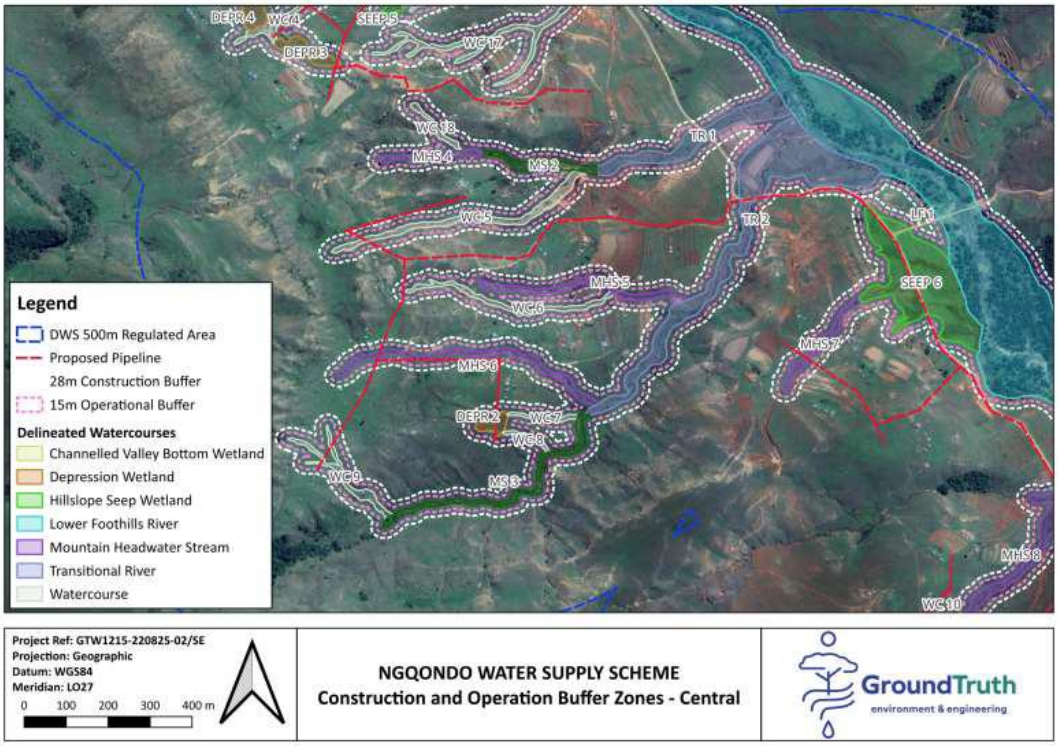

Figure 33: Results of the aquatic ecosystem buffer zone assessment for the construction and operation phase for the central portion of the study area (Ellery, 2025).

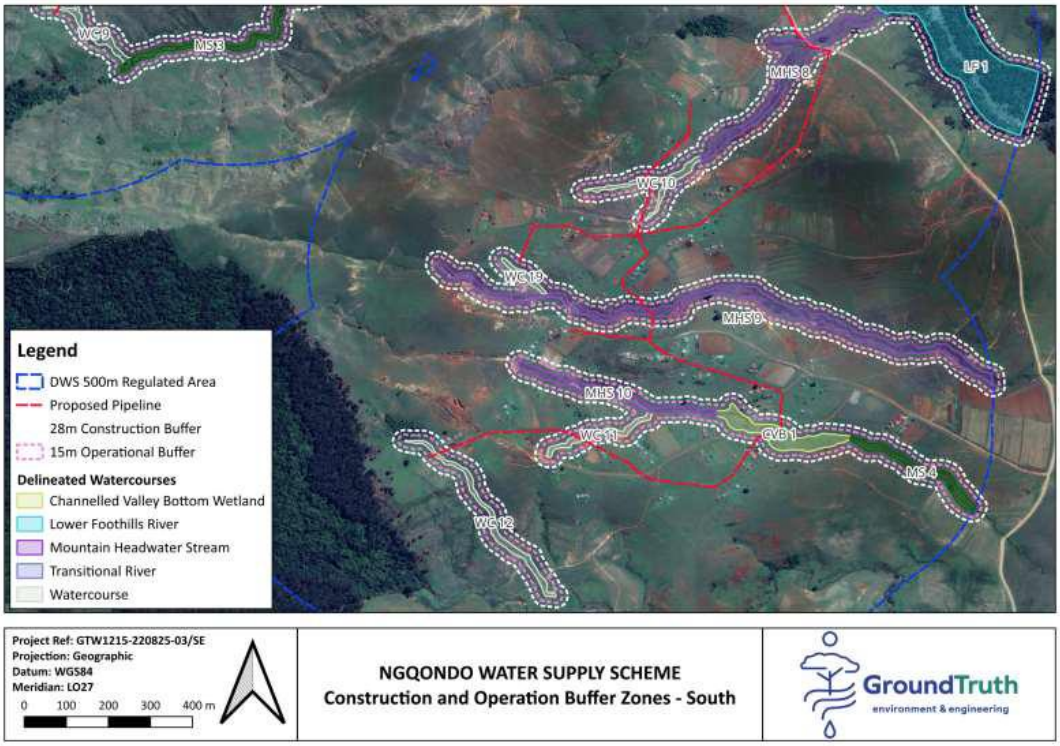

Figure 34: Results of the aquatic ecosystem buffer zone assessment for the construction and operation phase for the central portion of the study area (Ellery, 2025).

19.2.4.6. Potential Impacts of the pipeline servitude and water supply scheme

It is important to understand the potential impacts on the aquatic ecosystems associated with any form of development. The proposed development includes the construction of a total of approximately 1.2km of uPVC pipes of 63mm diameter of various classes, 5km of HDPE pipes of 50mm diameter of various classes, 4.5km of Klambon steel pipes of sizes ranging from 50mm diameter to 90mm diameter. These pipes will provide clean drinking water to the residential houses located on the east-facing slopes where the study was undertaken. The proposed pipelines cross various aquatic ecosystems and watercourses and therefore there are direct impacts envisaged as a result of the construction of the water pipelines. The anticipated impacts have been split into three separate categories to keep the risk and impact assessments simple, considering the number of watercourses to be assessed. These three categories are 1) impacts and risks posed to watercourses from pipeline alignments within the catchment of the watercourse, but that fall outside of the construction and operational buffer zones, 2) impacts and risks posed to watercourses from pipeline alignments within the catchment of the watercourse, but that fall inside the construction and operational buffer zones, and 3) impacts and risks posed to watercourses from direct impacts where a pipeline alignment crosses directly through a watercourse.

The potential impacts to the hydrologically linked aquatic ecosystems are numbered and listed below:

Construction Phase Impacts

The impacts associated with the construction of small features such as pipelines weirs generally relate to the physical disturbance footprint of the construction activities, such as vehicle movements, earth moving and storage etc., as well as the potential of the infrastructure to create impoundments, additional water inputs, and unfavourable sub-surface drainage within the watercourse.

I. Water contamination from the operation and washing of machinery in the catchments of the watercourses.
II. Siltation in the aquatic ecosystems due to vegetation clearing and earthworks that will be undertaken within and in the catchments of the watercourses.
III. Spread of invasive alien plants into the watercourses as a result of disturbance during construction.
IV. Direct loss of watercourse habitat due to excavation and installation of pipelines which could be a result of water contamination, siltation or the spread of IAPs.

Operational Phase Impacts

Linear features such as pipelines tend to have spatially limited impacts during the operational phase unless they interrupt driving processes that shape watercourse structure and function. The impacts of linear features are generally limited to the construction phase, and the main impact associated with the operational phase is if the infrastructure fails. These can include:

I. Burst pipelines could result in additional water inputs into the watercourses and could cause erosion in the watercourses.

19.2.5. DFFE Screening Report Sensitivity Results and Verification (Aquatic Biodiversity Theme)

The Department of Forestry, Fisheries and the Environment's (DFFE) National Environmental Screening Tool has flagged the aquatic biodiversity theme of the proposed Ngqondo Water Supply Scheme site as having "Very High" sensitivity. This is largely due to the presence of mapped wetlands and riverine systems within 500 metres of the planned development footprint (Hawley & Desmet, 2020). This sensitivity rating wasn't just taken at face value — it was confirmed by the Environmental Assessment Practitioner (EAP) through a combination of desktop screening and a site visit, both of which formed part of the Environmental Impact Assessment process (Figure 31).

During the site verification, multiple wetland areas were identified, all of which are hydrologically connected to parts of the proposed development. While the nearby Mbashe River is not considered highly sensitive, it still plays an ecological role in the area. Because of the proximity and ecological importance of these water features, a detailed aquatic biodiversity specialist study is required. This assessment, guided by the National Environmental Management Act (Act No. 107 of 1998), as amended in 2020 (GNR 320), will help determine the current ecological condition of the wetlands and river, and guide appropriate mitigation measures to ensure the natural systems are protected during and after construction.

Figure 35: Results from the National Web-Based Screening for the Aquatic Biodiversity Theme, indicating a Very High Sensitivity.

19.3. Archaeological and Cultural Heritage

A Phase 1 Archaeological and Cultural Impact Assessment (AIA) was conducted by Ms Celeste Booth, an independent archaeologist, in December 2025.

No visible archaeological and / or other similar heritage remains were identified during the survey for the proposed Ngqondo WSS. However, several relevant archaeological and heritage impact assessments have been conducted within the region. These impact assessments have identified several Early, Middle, and Later Stone Age artefact scatters and sites, coastal archaeological sites, historical artefacts and built environment structures, as well as evidence of Iron Age agropastoralist occupation and/or interaction by the presence of broken earthenware pot sherds and associated material culture and settlement patterns.

The area for proposed was surveyed on foot by the author of the report accompanied by a security escort. GPS co-ordinates, the survey tracks, and sites were plotted using the Avenza Maps application. The results of the survey showed an existing pipeline that connects the command reservoir in Sundwana to the Water Treatment Facility in Ngqondo. Archaeological visibility was generally good over most of the area surveyed. If it is anticipated that graves or other similar heritage features may be disturbed or negatively impacted during the implementation of the project, see Appendix D for recommendations on preferred buffer zones and the procedure to follow if graves / unknown burials are uncovered during the construction process and for the exhumation and reburial of graves. Negative impact on the archaeological landscape is considered as low as no observed material heritage resources would be negatively impacted. However, unseen material resources, such as stone artefacts and unmarked human burials may be negatively impacted if uncovered during the course of the proposed development and recommendations and mitigation measures in the report are ignored. Additionally, the impact on the current cultural landscape is considered as low. Although remnants of past and present cultural landscape still occur on the landscape within the proposed development and surrounds, the changing landscape necessitates for basic water infrastructure and services to the communities.

Little systematic archaeological research has been conducted within the immediate area of the proposed development. However, several relevant archaeological and heritage impact assessments have been conducted within the region. These impact assessments have identified several Early, Middle, and Later Stone Age artefact scatters and sites, coastal archaeological sites, historical artefacts and built environment structures, as well as evidence of Iron Age agropastoralist occupation and/or interaction by the presence of broken earthenware pot sherds and associated material culture and settlement patterns.

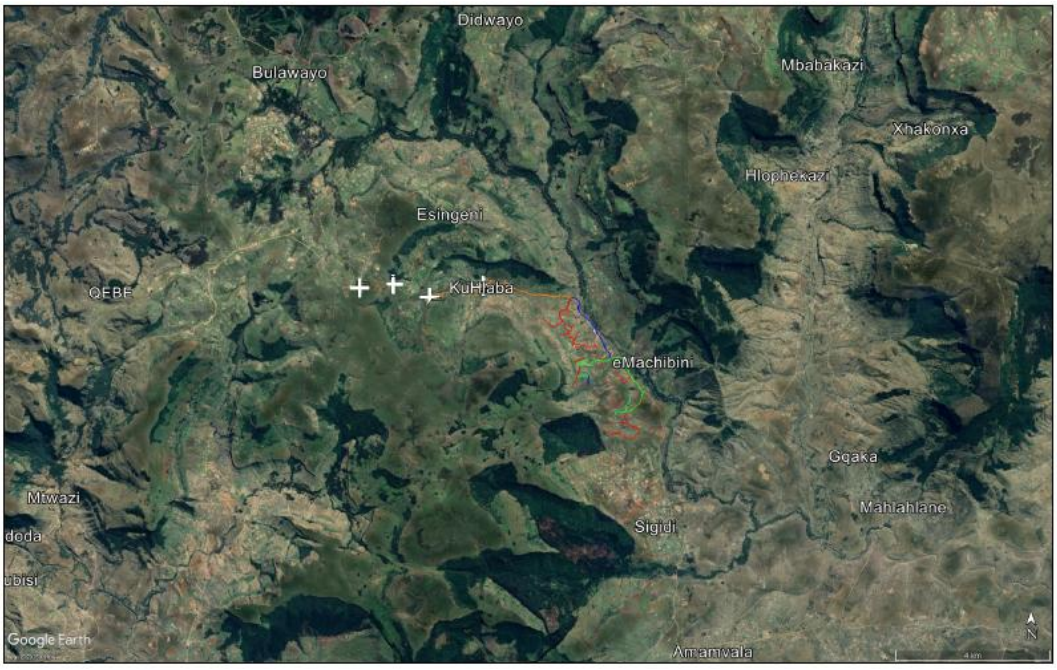

Figure 36: Google Earth generated map of the location of the proposed showing the location of the proposed Ngqondo Water Supply Scheme showing the surrounding villages. (Booth, 2025).

The recommendations contained within Booth's (2025) AIA assessment are as follows:

- If the current layout of the proposed water reticulation project is re-aligned at any time during the project, it is possible that additional heritage assessments or the heritage specialist may be required.
- If it is anticipated that graves or other similar heritage features may be disturbed or negatively impacted during the implementation of the project, see Appendix D for recommendations on preferred buffer zones and the procedure to follow if graves / unknown burials are uncovered during the construction process and for the exhumation and reburial of graves.
- construction managers/foremen and/or the ECO and/or anyone who may be permanently on-site during pre-construction and construction phases of the project should undergo training before the construction activities start on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
- A Chance Finds Protocol archaeological and cultural heritage finds must be compiled and be readily available for the Environmental Control Officer (ECO) and/or construction manager/s and/or or anyone who may be permanently on-site during the relevant pre-construction and construction phases of the project to follow the correct procedures when accidentally uncovering archaeological sites and possible unmarked burials.
- If concentrations of pre-colonial archaeological heritage material (such as below surface dense artefacts accumulations and associated material) and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the author of the report and / or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (043 492 1370). Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the archaeological / heritage site may then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue. The costs for the phase 2 mitigation will be on the onus of the developer.

19.3.1. DFFE Screening Report Sensitivity Results and Verification (Archaeological and Cultural Heritage Theme)

According to the National Screening Tool's Archaeological and Cultural Heritage theme, the study site is classified as having a **Low** sensitivity.

Given the findings and the results from Booth's (2025) Archaeological and Cultural Impact Assessment, it is believed that the low sensitivity rating of the screening tool is accurate.

19.4. Palaeontology

A Palaeontological Impact Assessment Report was compiled by Dr Barry Milstead in November 2025. A field survey was conducted on 10 September 2025 and involved a non-intrusive site assessment. During the survey, path of the traverses was recorded as a trackway on a hand-held GPS. Photographs were taken, and observations were taken at several locations. The location of the photographs and observation points was recorded using a hand-held GPS. A summary of the findings from the report titled " **Full Palaeontological Heritage Impact Assessment Report on the Site of the Proposed Implementation of a Water Supply Scheme in Ngqondo Village, Dr Ab Xuma Local Municipality, Chris Hani District Municipality, Eastern Cape Province"** is provided below.

The Palaeontological Impact Assessment (PIA) evaluated the potential impacts on fossil resources associated with the proposed implementation of a Water Supply Scheme in Ngqondo Village, Dr Ab Xuma Local Municipality, Chris Hani District Municipality, Eastern Cape Province. The assessment forms part of the Heritage Impact Assessment under Section 38 (2a) of the National Heritage Resources Act (Act 25 of 1999) and aims to ensure compliance with relevant heritage regulations.

The region surrounding the project area is entirely underlain by rocks of the Permian Adelaide and Triassic Tarkastad Subgroups, Karoo Supergroup. The bedrocks underlying the project infrastructure are the sediments of the Molteno Formation and of the Tarkastad Subgroup (Beaufort Group, Karoo Supergroup). Examination of the 1:250,000 Geological Sheet 3128 Umtata (Geological Survey of South Africa, 1979) indicates that the Tarkastad Subgroup sediments are those of the Burgersdorp Formation.

Recent Palaeontological impact Assessment Reports assessing projects underlain by the Burgersdorp Formation within the wider region (Almond, 2010a, 2010b, and 2018) support the presence of a diverse fauna preserved within these rocks. However, Almond (2018) reports on a site investigation for a borrow pit and indicates that no fossil materials were located. This suggests that the potential for encountering fossil materials in a small area is not high. The palaeontological potential of these Burgersfort Formation is assessed as moderate, however, the scientific significance of any fossils located could be high.

No fossils were located within the alluvium, colluvium, or soil horizons. Soils are formed in situ from the weathering and decomposition of the underlying bedrock. The resultant total decomposition of the bedrock strata means that it is highly unlikely that any fossil materials contained within the bedrock will survive the development of the soil horizons. Any fossil materials that might occur within clasts in the alluvium/colluvium would most likely be derived from weathering of the Burgersfort or Molteno Formations. As such, they would not be in situ and, as such, of little scientific significance. The palaeontological potential of these regolith horizons is assessed as nil to low.

The volume of bedrock that will be disturbed by the construction of this water reticulation system will be large, when the entire extent of the project's surface area is considered. Although the cross-section of each excavation will be small (e.g. wide enough to bury pipes to a maximum of 2 m deep), the cumulative volume of rock to be excavated means that it is probable that fossil materials will be negatively impacted. Added to this scenario is that the palaeontology of the Eastern Cape is poorly understood compared to other parts of South Africa. As such, any fossils located would potentially add significantly to the understanding of the faunas in this biozone. Accordingly, is proposed, herein, that damage mitigation and fossil-find protocols need to be put in place to safeguard the palaeontological heritage of the region.

The following mitigation protocols are recommended by the specialist:

- Excavations made as part of the implementation of this project, as well as any areas cleared (e.g., the footprint of storage tanks) should be examined by a suitably experienced Karoo palaeontologist to ascertain if fossils are present.
- However, the project has a large aerial extent, and it is expected that the installation of the infrastructure elements will occur over a protracted period of time.
- Thus, it would not be financially viable to have a palaeontologist permanently based on site for the duration. Nor would it be financially viable to have frequent visits made, as his would be prohibitively expensive and would only provide selected "snapshots" of the palaeontological potential of the excavations (as they will be infilled as soon as the pipelines are laid).
- Before commencement of the project one person in the staff (e.g., site foreman, or Environmental Control Officer [ECO]) must be identified and appointed as responsible for the implementation of the damage mitigation protocol outlined herein. In instances of accidental fossil discovery this must be reported to the ECO or site manager. If the ECO or site manager is not present on site, then the responsible person on site should follow the protocol correctly in order to not jeopardize the conservation and well-being of the fossil material. It must be accepted, however, that damage or destruction may occur to fossils as they will be uncovered by industrial machinery.
- Workmen and foremen need to be trained by the appointed palaeontologist in the procedure to follow in instances of accidental discovery of fossil material. Training via a video conference is suggested as a cost-effective methodology. A brief introduction to the process to follow in the event of possible accidental discovery of fossils should be conducted to the staff by the designated Environmental Control Officer, or the foreman or site agent in the absence of the ECO. This will allow all staff to be prepared in the event that accidental discovery of fossil material takes place.
- Once a workman notices possible fossil material, he/she should report this to the ECO or site agent.
- Should staff identify fossil materials work in that area should be immediately suspended, and the appointed palaeontologist immediately informed by the appointed company agent. Photographs of the fossil material (and, if possible, GPS coordinates) should also be transmitted to the palaeontologist.
- In addition to the above suggested training process of staff, a work plan must be negotiated between the contractors performing the infrastructure installation, the Chris Hani District Municipality (as the water services provider), and the appointed palaeontologist to determine (based on the schedule of the project) the appropriate number and duration of site visits to ascertain if there are fossils in the excavations/cleared areas/or waste rock piles from the excavations.

- Should scientifically or culturally significant fossil material exist within the project area any negative impact upon it could be mitigated by its excavation (under permit from SAHRA) by a palaeontologist and the resultant material being lodged with an appropriately permitted institution. In the event that an excavation of the fossil material is either impossible or inappropriate the fossil or fossil locality could be protected and the site of any planned construction moved.

As the project infrastructure required for this project will be constructed upon potentially fossiliferous strata that are characterised as high sensitivity (red) within the SAHRA Palaeo-Sensitivity map a Full Palaeontological investigation of the rocks was conducted. No fossil material was located, however, given the potentially fossiliferous nature of the bedrock strata and the extensive nature of the project's footprint, it is considered possible that scientifically significant vertebrate fossils of the Cynognathus Assemblage Zone as well as fossil plant belonging to the *Glossopteris* Flora will be encountered and negatively impacted upon. Any negative impacts will be of unsure probability, and localised extent. Damage to fossils will be irreparable and potentially impacting upon fossils of a highly scientifically significant fauna and flora.

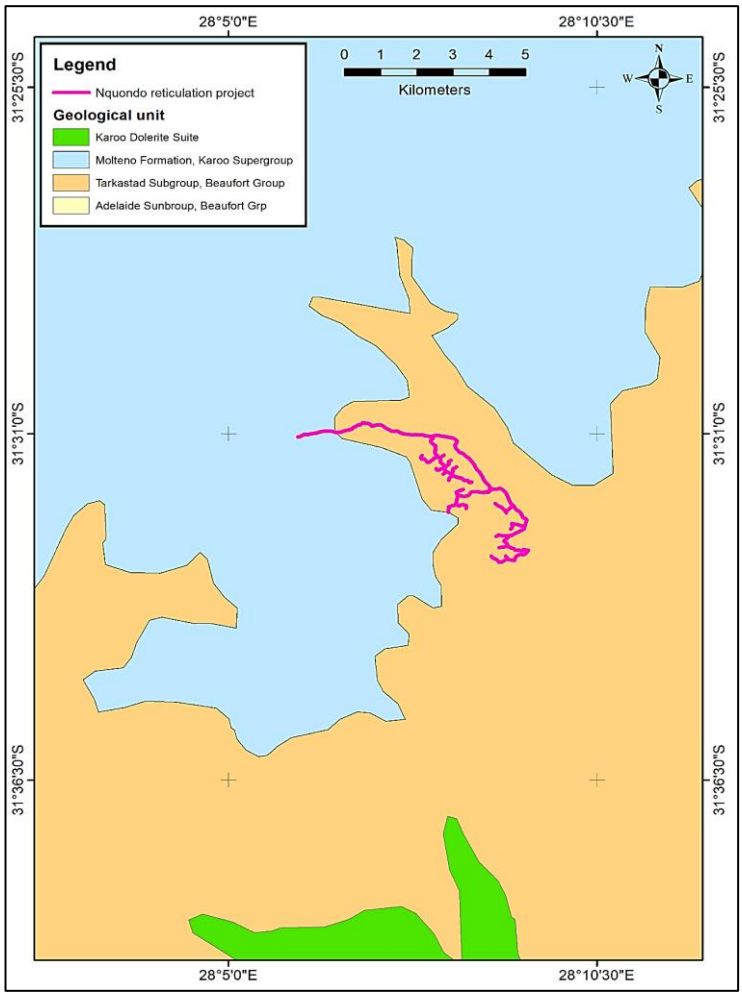

Figure 37: Geological map of the bedrock geology underlying the project area and its environs. (Barry Milstead, 2025).

19.4.1. DFFE Screening Report Sensitivity Results and Verification (Palaeontology Theme)

According to the National Screening Tool's Palaeontology theme, the study site is classified as having a **Very High** sensitivity.

Given the findings and the results from Millstead's (2025) Palaeontological Heritage Impact Assessment, it is believed that the very high sensitivity rating of the screening tool is accurate.

20. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including	[redacted]	NO✓
Archaeological or paleontological sites, on or close (within 20m) to the site?		NO✓
If YES, explain:	N/A	

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

Refer to Appendix D for the specialist input provided by Dr Barry Milstead (Palaeontological Impact Assessment) and Celeste Booth (Archaeological and Cultural Impact Assessment).

Palaeontological Impact Assessment:
No fossils were located within the alluvium, colluvium, or soil horizons. Soils are formed in situ from the weathering and decomposition of the underlying bedrock. The resultant total decomposition of the bedrock strata means that it is highly unlikely that any fossil materials contained within the bedrock will survive the development of the soil horizons. Any fossil materials that might occur within clasts in the alluvium/colluvium would most likely be derived from weathering of the Burgersfort or Molteno Formations. As such, they would not be in situ and, as such, of little scientific significance. The palaeontological potential of these regolith horizons is assessed as nil to low.

Archaeological and Cultural Impact Assessment:
No visible archaeological and / or other similar heritage remains were identified during the survey for the proposed Ngqondo WSS. However, several relevant archaeological and heritage impact assessments have been conducted within the region. These impact assessments have identified several Early, Middle, and Later Stone Age artefact scatters and sites, coastal archaeological sites, historical artefacts and built environment structures, as well as evidence of Iron Age agropastoralist occupation and/or interaction by the presence of broken earthenware pot sherds and associated material culture and settlement patterns.

Will any building or structure older than 60 years be affected in any way?	[redacted]	NO ✓
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		NO ✓

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

SECTION C: PUBLIC PARTICIPATION

21. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;
(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  (vii) any other party as required by the competent authority;
(c) placing an advertisement in—
  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

Refer to Appendix G.

22. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and
(b) state—

(i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;

(ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;

(iii) the nature and location of the activity to which the application relates;

(iv) where further information on the application or activity can be obtained; and

(iv) the manner in which and the person to whom representations in respect of the application may be made.

Refer to Appendix G.

23. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

Refer to Appendix G.

24. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

25. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

Refer to Appendix E.

26. AUTHORITY PARTICIPATION

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least 30 (thirty) calendar days before the submission of the application.

List of authorities informed:

1. Department of Economic Development, Environmental Affairs and Tourism – Chris Hani Region
2. Department of Water and Sanitation
3. South African Civil Aviation Authority
4. Department of Defence
5. Eastern Cape Provincial Heritage Authority (ECPHRA)

List of authorities from whom comments have been received:

1. ECPHRA

27. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Any stakeholder that has a direct interest in the site or property, such as servitude holders and service providers, should be informed of the application at least 30 (thirty) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders? YES✓

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

A community meeting was scheduled in Ngqondo for the 8th of September 2025; however, no members of the community attended the meeting. Following that, a discussion was held with the ward councillor of Ward 19, where the councillor shared her comments regarding the proposed development. The councillor noted that the proposed development will provide much needed jobs during construction.

The local chief also noted that he is in support of the project and that he would like to register as and IA&P.

The following comments were recorded during the door-to-door visit in the community:

- I confirm that this water project we need it within the community, we appreciate it within our community.
- I am happy that finally the project is happening, we have been struggling to get water. Please make sure that the project does not stop.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 as amended, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

28. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

Issues raised outside initial public participation period
None.

Issue's raised during initial public participation period

1. DEDEAT Pre-application phase:
   - Application for Environmental Authorisation will be required to obtain Environmental Authorisation for the proposed development.

2. ECPHRA
   - NID form as well as the AIA and PIA Reports were uploaded onto SAHRIS and submitted to ECPHRA on 10 April 2026.
   - On 23 April 2026, ECPHRA acknowledged and accepted the submitted NID, BID, AIA and PIA, but noted that ECPHRA is the responsible authority within the Eastern Cape.
   - It was also requested that the project proponent/representative must notify ECPHRA of the date of commencement of the project or share the project schedule and the Environmental Authorisation (EA).
   - Additionally, project proponent/representative must submit a site specific, detailed heritage & paleontological chance finds procedure (CFP), before the start of the pre/construction phase, for ECPHRA's approval.
   - Heritage induction and training for all ground crew, must include identification of archaeological, palaeontological, historical, and burial-related material. This ensures lawful heritage compliance during all phases of the project.
   - Additionally, there must be monitoring after vegetation clearing and during excavations.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report):

Response (any) to Issue's raised during initial public participation period

None.

Further responses can be seen in Appendix E and Appendix G4.

29. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

List the potential direct, indirect and cumulative property/activity/design/technology/operational alternative related impacts (as appropriate) that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed.

Alternative (preferred alternative)

Direct impacts:

Due to impacts being a combination of Direct, Indirect and Cumulative Please see Table 41 below

Indirect impacts:

Due to impacts being a combination of Direct, Indirect and Cumulative Please see Table 41 below

Cumulative impacts:

Due to impacts being a combination of Direct, Indirect and Cumulative Please see Table 41 below

Table 38: List of potential impacts for the preferred alternative of the Proposed Ngqondo Water Supply Scheme.

Alternative (preferred alternative)
Potential Impacts that are likely to occur in PLANNING & DESIGN PHASE
Legislation and policy compliance (Direct): During the Planning and Design Phase, failure to comply with existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or undue disturbance to the natural environment
Potential Impacts that are likely to occur in CONSTRUCTION PHASE
Water Contamination (Direct & Indirect): Water contamination from the operation and washing of machinery in the catchments of the watercourses. This impact can be mitigated following the mitigation measures provided by the Aquatic Specialist.
Siltation in Watercourses (Direct & Indirect): The siltation in the watercourses due to vegetation clearing and earthworks that will be undertaken in the catchments of the watercourses. This impact can be mitigated following the mitigation measures provided by the Aquatic Specialist.
Spread of Invasive Alien Plants (Direct): Spread of invasive alien plants into the watercourses because of the disturbance during construction. This impact can be mitigated following the mitigation measures provided by the Terrestrial Biodiversity Specialist.
Soil Erosion (Direct): Susceptibility of areas to erosion due to construction related disturbances. Removal of vegetation cover and soil disturbance may result in areas being susceptible to soil erosion after completion of the activity. This impact can be mitigated following the mitigation measures provided by the Terrestrial Biodiversity Specialist.
Loss of Watercourse Habitat (Direct): Direct loss of watercourse habitat due to excavation and installation of water pipelines. This impact can be mitigated following the mitigation measures provided by the Aquatic Specialist.

Archaeological and Cultural Heritage (Direct): In the unlikely event that archaeological and cultural remains occur during the construction phase, they are likely to be damaged during excavation and their heritage value lost in the process. This impact may be mitigated with the implementation of the mitigation measures provided by the Archaeological and Heritage Specialist.
Palaeontology (Direct): In the unlikely event that fossils and other palaeontological remains occur during the construction phase, they are likely to be damaged during excavation and their heritage value lost in the process. This impact may be mitigated with the implementation of the mitigation measures provided by the Palaeontological Specialist.
Employment Opportunities (Direct): The proposed project will create temporary employment during the construction phase.
Climate Change: Contribution to Greenhouse Gasses (Direct): During the construction phase, the increase in construction vehicle traffic and the use of diesel/petrol operated construction equipment will increase the GHG emissions generated as a result of construction activities (e.g. carbon dioxide, carbon monoxide, etc.). These GHGs will cumulatively contribute to the global GHG emission sources
Solid Waste Generation (Direct): Solid waste generation during construction activities i.e. builders rubble, cement, etc. and general plastic waste may proliferate into the terrestrial and aquatic environments near the project site.
Loss of Flora Species of Conservation Concern (Direct): Loss of Flora Species of Conservation Concern during construction site clearing activities
Potential Impacts that are likely to occur in OPERATIONAL PHASE
Spread of Alien Invasive Species (Direct): The disturbance caused during the construction phase creates opportunities for alien and invasive plant species to establish and spread, causing loss of biodiversity and ecosystem services.
Flow Modification (Direct & Indirect): Increased flood peaks, runoff velocity and water quantity due to the increase in hardened surfaces in the catchments, thereby causing increased water inputs (flow modification).
Erosion and Sedimentation of Watercourses (Direct & Indirect): An increase in stormwater runoff volumes and velocities from the bare / hardened surfaces associated with the proposed development or from areas left bare as a result of construction related activities may result in the erosion and sedimentation of downslope watercourses.
Community Access to Potable Water (Direct): The operation of the WSS will allow for the Ngqondo community to have access to potable water.
Potential Impacts that are likely to occur in DECOMMISSIONING AND CLOSURE PHASE
No discernible impacts are envisaged as it is unlikely that any aspect of the project will be decommissioned or closed now.

Table 39: List of potential impacts for the preferred alternative of the Proposed Ngqondo Water Supply Scheme.

No-Go Alternative (least preferred alternative)

Potential Impacts that are likely to occur SHOULD THERE BE NO DEVELOPMENT
Loss of Employment opportunities (Direct & Indirect): The no-go alternative would result in no job creation and skill development for the community members.
Lack of Access to Potable Water (Direct): Community members from the Ngqondo village would not be able to obtain potable water from the WSS.

30. CLIMATE CHANGE ASSESSMENT

Climate change issues must be considered as part of the EIA process. EAP must determine:

a) The potential impact of climate change on society and the economy, whether the impact is negative or positive, considering that society needs to be at the centre of the proposed development;

Climate change may result in extreme weather patterns which could lead to flooding or drought. South Africa is currently facing severe pressure with respect to water security due to an increased water demand with growing populations, poor planning and management of water resources, limited investment into water reservoir infrastructure, and recurring droughts over the past 10 years. Thus, the proposed water supply scheme can assist the Ngqondo community to cope with potential droughts caused by climate change.

See Appendix G7

b) The potential alternatives of the proposed development, alternatives that will have less impact on climate change (environment and generation of waste included), the society and economy;
The no-go alternative is the only alternative that has been considered. This alternative would involve not constructing the water supply scheme for the Ngqondo Village. The impact on climate change would be slightly less as there would be no GHGs emitted by vehicles and machinery during the construction phase of the proposed development.

c) whether, and to what extent, the proposed development will result in the release of greenhouse gas (GHG) emissions;

During the construction phase, the increase in construction vehicle traffic and the use of diesel/petrol operated construction equipment will increase the GHG emissions generated as a result of construction activities (e.g. carbon dioxide, carbon monoxide, etc.). These GHGs will cumulatively contribute to the global GHG emission sources. GHG emissions will not directly be produced in the operational phase from the water supply scheme.

d) whether the proposed development is necessary to achieve long term decarbonisation goals;

This project will not contribute to achieving long term decarbonisation goals.

e) the impact of the development on social, economic, natural and built environment that are crucial for climate change, adaptation and resilience;

Climate change may result in extreme weather patterns which could lead to flooding or drought. South Africa is currently facing severe pressure with respect to water security due to an increased water demand with growing populations, poor planning and management of water resources, limited investment into water reservoir infrastructure, and recurring droughts over the past 10 years. Thus, the proposed water supply scheme can assist the Ngqondo community to cope with potential droughts caused by climate change.

f) the projected impact of climate change on proposed development; and surrounding environment, and implications for the development.

Climate change may result in extreme weather patterns which could lead to flooding or drought. South Africa is currently facing severe pressure with respect to water security due to an increased water demand with growing populations, poor planning and management of water resources, limited investment into water reservoir infrastructure, and recurring droughts over the past 10 years. Thus, the proposed water supply scheme can assist the Ngqondo community to cope with potential droughts caused by climate change.

g) Explanation of how the impacts is likely to be exacerbated or minimised as result of climate change and what measures are likely to be implemented to accommodate and manage (adapt to) the anticipated worst scenario where applicable

Climate change may result in extreme weather patterns which could lead to flooding or drought. South Africa is currently facing severe pressure with respect to water security due to an increased water demand with growing populations, poor planning and management of water resources, limited investment into water reservoir

infrastructure, and recurring droughts over the past 10 years. Thus, the proposed water supply scheme can assist the Ngqondo community to cope with potential droughts caused by climate change.

During the operational period, Chris Hani District municipality must inspect the integrity of the water supply scheme on a regular basis to ensure no failures occur that could potentially impact the surrounding terrestrial and aquatic environment.

h) whether, and to what extent, the impacts identified in (a) –(g) can be mitigated.

If the water supply scheme is continuously monitored and maintained, the infrastructure will be sound to handle climate change impacts.

31. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Alternative A (Preferred Alternative)

Table 40: Pre and Post Impact Significance

	IMPACT SIGNIFICANCE											
	PRE-MITIGATION						POST MITIGATION					
	INSIGNIFICANT	VERY LOW	LOW	MEDIUM	HIGH	V. HIGH	INSIGNIFICANT	VERY LOW	LOW	MEDIUM	HIGH	V. HIGH
Planning & Design Phase	-	-	-	-	1 (-ve)	-	-	-	1 (-ve)	-	-	-
Construction Phase	-	2 (-ve)	3 (-ve)	4 (-ve) 1 (+ve)	1 (-ve)	-	-	5 (-ve)	4 (-ve)	1 (-ve)	-	-
Operational Phase	-	-	1(-ve)	2 (-ve) 1 (+ve)	-	-	-	1 (-ve)	2 (-ve)	-	-	-
Decommissioning Phase	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	-	2 (-ve)	4 (-ve)	6 (-ve) 2 (+ve)	2 (-ve)	-	-	6 (-ve)	7 (-ve)	1 (-ve)	-	-

High Significance Impacts

During the planning and design phase, failure of legislation and policy compliance was identified as a high negative impact of significance. This was because of the potential failure to comply with existing policies and legal obligations which could lead to the project conflicting with local, provincial and national policies, legislation etc. This could result in legal non-compliance, fines, overall project failure or undue disturbance to the natural environment.

During the construction phase, there is a risk of spreading invasive alien plants in terrestrial and aquatic environments due to construction related disturbances and was identified as a negative impact of high significance.

Medium Significance Impacts

During the construction phase, potential siltation in watercourses due to vegetation clearing and earthworks that will be undertaken in the catchments of the watercourses was identified as a negative impact of medium significance.

The susceptibility of areas to erosion due to construction related disturbances and the removal of vegetation cover and soil disturbance may result in areas being susceptible to soil erosion after completion of the activity was a negative impact of medium significance identified.

A negative impact of medium significance noted was the direct loss of watercourse habitat due to excavation and installation of water pipelines.

During the construction phase, the proposed project will create temporary employment for local communities and thus was a positive impact of medium significance identified.

Climate change and contribution to greenhouse gasses was a negative impact of medium significance during the construction phase identified due to the increase in construction vehicle traffic and the use of diesel/petrol operated construction equipment which increase GHG emissions generated (e.g. carbon dioxide, carbon monoxide, etc.).

During the operational phase of the project, the disturbance caused from the construction phase could potentially create opportunities for alien and invasive plant species to establish and spread after construction is complete, causing loss of biodiversity and ecosystem services. This was identified as a negative impact of medium significance.

Additionally, during the operational phase, an increase in stormwater runoff volumes and velocities from the bare / hardened surfaces associated with the proposed development or from areas left bare as a result of construction related activities may result in the erosion and sedimentation of downslope watercourses. This was also identified as a negative, medium significance impact.

During the operational phase, the operation of the WSS will allow for the Ngqondo community to have access to potable water and therefore was identified as a positive impact of medium significance.

Low Significance Impacts

During the construction phase, water contamination from the operation and washing of machinery in the catchments of the watercourse was identified as low significance negative impact.

Solid waste generation during construction activities, which may proliferate into the terrestrial and aquatic environments near the project site, was identified as a negative impact of low significance.

The loss of flora species of conservation concern during construction site clearing activities was identified as a low significance negative impact.

Increased flood peaks, runoff velocity and water quantity due to the increase in hardened surfaces in the catchments, thereby causing increased water inputs was identified as a negative impact of low significance during the operational phase.

Very Low Significance Impacts

The remaining impacts of very low impact significant prior to mitigation remain at very low.

No-go alternative (compulsory)

Table 41: Impact Significance of Least Preferred (No-go) Alternative

IMPACT SIGNIFICANCE									
PRE-MITIGATION					POST MITIGATION				
INSIGNIFICANT	VERY LOW	LOW	MEDIUM	HIGH	INSIGNIFICANT	VERY LOW	LOW	MEDIUM	HIGH

No-Go Alternative	-	-	-	-	2 (-ve)	-	-	-	-	2 (-ve)
TOTAL	-	-	-	-	2 (-ve)	-	-	-	-	2 (-ve)

High Significance Impacts

A negative impact of high significance for the no-go alternative would result in no job creation and skill development for the community members.

Additionally, lack of access of community members in Ngqondo to obtain potable water from the water supply scheme was also identified as a negative impact of high significance.

SECTION E. RECOMMENDATIONS OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES✓
Is an EMPr attached?	YES✓

The EMPr must be attached as Appendix F.

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

N/A

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

Based on the information provided it is the opinion of Indwe Environmental Consulting that no significant fatal flaws have been identified for the Proposed Water Supply Scheme for the Ngqondo Village, Chris Hani Region, Eastern Cape and that the information contained within this report is sufficient to allow DEDEAT to make an informed decision.

Indwe Environmental Consulting therefore recommends that Environmental Authorisation be granted for the proposed project based on the following recommendations.

- Strict adherence to the relevant mitigation measures described above and in Appendix G7 and compliance with the attached EMPr (Appendix F) is adhered to throughout all phases of the proposed project to reduce the risk or significance of impacts to an acceptable level after mitigation measures are adhered to.
- The validity period of the environmental authorisation should be for two years in which time construction should commence.
- All necessary authorisations in the form of an EA, GA/WUL and/or other must be obtained prior to construction should they be required.
- All species requiring PNCO permits are obtained.
- An ECO should be appointed for the duration of the construction period to monitor the compliance with conditions of the authorisation/permits.
- The ECO needs to conduct a pre-commencement survey for PNCO species that will need search and rescue after the relevant permits have been achieved.
- The construction activities must be restricted to the approved actual footprint. Ensure minimal or no disturbance outside of the development footprint area during construction, and all material

arising from the development must be prohibited from entering the freshwater habitats and associated buffer zones.

- Stormwater should be managed using suitable structures. Silt and sedimentation should be kept to a minimum, using the above-mentioned structures by also ensuring that all structures do not create any form of erosion.
- Vegetation clearing should occur in parallel with the construction progress to minimise erosion and/or run-off. Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment.
- All construction materials including fuels and oil should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination into the stream adjacent to the site. Washing and cleaning of equipment should also be done in berms or bunds, to trap any cement and prevent excessive soil erosion.
- The construction of the proposed infrastructure should occur during the dry season in the months of May, June, July, August and September when rainfall is minimal to non-existent.
- All alien invasive vegetation must be removed from the site, and an alien invasive management plan must be developed prior to construction to prevent further spread and establishment of problem species into all freshwater and terrestrial ecosystems.

SECTION F: APPENDICES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information