MANDLAKAZI BULK WATER SUPPLY SCHEME – PHASE 1, ZULULAND DISTRICT MUNICIPALITY, KWAZULU-NATAL

Phase 1 Heritage Impact Assessment

February 2022

FOR: **Greenbelt Projects**
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EXECUTIVE SUMMARY

At present, raw water for the Mandlakazi Water Treatment Works (WTW) is currently sourced through privately owned infrastructure (belonging to the Senekal Suiker Trust) and as a result of the risks associated with this dependency, the Zululand District Municipality are investigating the development of their own dedicated raw water supply to the Mandlakazi WTW. The Mandlakazi Bulk Water Supply Scheme (BWSS) – Phase 1 aims to do this. The greater project's primary focus is to supply treated water to the Mandlakazi and Hlabisa Regional Water Supply Schemes with bulk supply to the towns of Mkuze and Gumbi.

The bulk water pipeline from the Pongolopoort Dam to the Mandlakazi WTW is approx. 32 km in length therefore it triggers section 41 (1)(a) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act No 5 of 2018) which refers to the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length.

The project is located in the Zululand District Municipality and is situated from the abstraction point at 27°29'34.96" S; 32°00'08.86" E to Mandlakazi WTW at 27°40'50.84" S; 31°55'01.56" E. There is a short alternative route for the pipeline that runs on the eastern side of the N2 highway as well as alternative routes close to the Pongolo Nature Reserve.

An inspection of the Mandlakazi BWSS – Phase 1 was undertaken on 8 February 2022. Large sections of the pipeline route including the alternative routes, were inspected on foot. Visibility was, in general, good but there were some sections that were overgrown with dense vegetation.

Historical images of the pipeline route indicate an area that is largely uninhabited which is still the case today. The pipeline area located north of the town of Mkuze is highly disturbed by sugar cane farming.

The inspection started from the Mandlakazi WTW with the pipeline route inspected largely on foot. Some homesteads were found situated north/north-west of the pipeline route with many located over 20m from the proposed pipeline. Several graves were found close to the northern boundary of the WTW. The pipeline is located 13m south of the graves and within the boundary of the WTW.

The specialist spoke to several residents who stated that most graves were found within homestead complexes with many at the rear of the homesteads or in the fenced fields which are mostly located away from the road and pipeline route.

During the inspection, three heritage sites were found, namely graves, low stone walling and the vehicular bridge crossing the Mkuze River.

The fossil sensitivity map indicates that much of the pipeline falls into an area of low fossil sensitivity; however, approximately the last 4km of pipeline to the Mandlakazi WTW falls into an area of very high fossil sensitivity. A desktop palaeontological study was undertaken which found that most of the proposed route lies on the basalts of the Letaba Formation that is very unlikely to preserve any fossils, especially not in the overlying soils that will be excavated. Only the southwestern section lies on potentially fossiliferous Ntabeni and Nyoka Formations but this route is the same as an existing pipeline. No fossils are known from these formations as the geological structures suggest that the rocks are the wrong type to contain fossils. Furthermore, the material to be excavated is soil which does not preserve fossils. It was recommended that a Fossil Chance Find Protocol should be added to the EMPr in case fossils are exposed during excavations.

In terms of section 39 (1) of the KwaZulu-Natal Amafa and Research Institute Act, graves or burial grounds older than 60 years or deemed to be of heritage significance by a heritage authority- (a) not otherwise protected by the above Act and (b) not located in a formal cemetery managed or administered by a local authority, may not be damaged, altered, exhumed, inundated, removed from its original position, or otherwise disturbed without the prior written approval of the Institute having been obtained on written application to the Institute. Graves are highly significant to many people and there are many traditional, cultural and personal sensitivities and norms concerning damage to graves or the relocation of graves. It is recommended that graves are not moved and that they are fenced to avoid any damage to them during the installation of the proposed pipeline.

The low stone walling is of low heritage significance and should not be impacted by the installation of the pipeline. If the walling is impacted, then application will need to be made to the Institute for permission to repair the damage as the walling is protected by section 40 (1) of the KwaZulu-Natal Amafa and Research Institute Act, 2018, which states that no person may destroy, damage, excavate, alter, write or draw upon or otherwise disturbed any battlefield, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without written permission of the Institute having been obtained on written application to the Institute.

The vehicular bridge that crosses the Mkuze River is possibly over 60 years hence protected by section 37 (1)(a) of the KwaZulu-Natal Amafa and Research Institute Act, which refers to the protection of structures that are or that may reasonably be expected to be older than 60 years. It is recommended that the bridge is not impacted in any way by the project. However, if the bridge is to be impacted or is impacted in any way, then application must be made to the Institute in

terms of the process described in section 3 of the draft KwaZulu-Natal & Research Institute Regulations, 2021 or section 2 of the KwaZulu-Natal Heritage Regulations 2012 if the 2021 regulations have not been officially promulgated by the time an application is made.

In terms of the alternatives, it is recommended that the alternative running alongside the N2 is utilised as no heritage resources will be impacted by this route. The original pipeline route may impact the vehicular bridge which could be older than 60 years. If the original route is used, then it is recommended that the more direct pipeline route to the Pongola Nature Reserve is utilised as it is shorter and therefore should have less impact on heritage resources.

The construction of the proposed Mandlakazi Phase 1 BWSS can proceed as long as the recommendations and mitigation measures provided in this report and in the desktop palaeontological report are observed and implemented where necessary.

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Desktop palaeontological study

I, **Jean Lois Beater**, act as an independent specialist for this project and I do not have any vested interest either business, financial, personal or other, in the proposed activity other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014.

SPECIALIST DETAILS

Name	Qualification	Professional Registration
Jean Beater	MA (Heritage Studies) MSc (Environmental Management)	Member of Association of South African Professional Archaeologists (No. 349) Member of IAIAsa (No. 1538)

1. INTRODUCTION

At present, raw water for the Mandlakazi Water Treatment Works (WTW) is currently sourced through privately owned infrastructure (belonging to the Senekal Suiker Trust) and as a result of the risks associated with this dependency, the Zululand District Municipality (ZDM) are investigating the development of their own dedicated raw water supply to the Mandlakazi WTW. The Mandlakazi Bulk Water Supply Scheme (BWSS) – Phase 1 aims to do this. The greater project's primary focus is to supply treated water to the Mandlakazi and Hlabisa Regional Water Supply Schemes with bulk supply to the towns of Mkuze and Gumbi (ECA Consulting 2021:1).

The Phase 1 Heritage Impact Assessment (HIA) was undertaken to establish if any heritage resources would be impacted by the proposed Mandlakazi BWSS.

2. LEGISLATIVE BACKGROUND

The bulk water pipeline from the abstraction point on Pongolopoort Dam to the Mandlakazi WTW is approximately 32 km in length therefore it triggers section 41 (1)(a) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act No 5 of 2018) which lists developments or activities that may require an HIA. Section 41 (1)(a) refers to: "the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length".

The project may also impact graves, structures, archaeological and palaeontological resources that are protected in terms of sections 37, 38, 39, and 40 of the KwaZulu-Natal Amafa and Research Institute Act, 2018.

In terms of section 3 of the National Heritage Resources Act 1999 (Act No 25 of 199), heritage resources are:

(a) places, buildings, structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and paleontological sites;
(g) graves and burial grounds, including—
    (i) ancestral graves;
    (ii) royal graves and graves of traditional leaders;

(iii) graves of victims of conflict;

(iv) graves of individuals designated by the Minister by notice in the *Gazette*;

(v) historical graves and cemeteries; and

(vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);

(h) of significance relating to the history of slavery in South Africa;

(i) movable objects, including:

(i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;

(ii) objects to which oral traditions are attached or which are associated with living heritage;

(iii) ethnographic art and objects;

(iv) military objects;

(v) objects of decorative or fine art;

(vi) objects of scientific or technological interest; and

(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

3. LOCATION

The project is located in the Zululand District Municipality and is situated from the abstraction point on the south-eastern end of Pongolopoort (27°29'34.96" S; 32°00'08.86" E) to the Mandlakazi WTW (27°40'50.84" S; 31°55'01.56" E) which is located approximately 15km south-west of the town of Mkuze. There is a short alternative route for the pipeline that runs on the eastern side of the N2 highway (indicated in pink) as well as alternative routes immediately south of the Pongolo Nature Reserve (see **Figure 1**).

4. TERMS OF REFERENCE

Undertake a Phase 1 HIA in order to determine the possible existence of heritage resources, as listed above, that could be impacted by the proposed Mandlakazi BWSS. Provide mitigation measures to limit or avoid the impact of the proposed project on heritage resources (if any).

Submit the HIA report to the provincial heritage resources authority, namely the KwaZulu-Natal Amafa and Research Institute (hereafter referred to as the Institute), for their consideration and comment.

Figure 1: Bulk water pipeline indicated in purple with alternative route indicated in pink

5. METHODOLOGY

A survey of literature, including other heritage impact assessment reports completed for the larger area, was undertaken in order to ascertain the history of the area and what type of heritage resources have or may be found in the area of development.

An inspection of the Mandlakazi BWSS – Phase 1 was undertaken on 8 February 2022. Large sections of the pipeline route including the alternative routes, were inspected on foot. Visibility was, in general, good but there were some sections that were overgrown with dense vegetation.

6. HISTORICAL BACKGROUND OF AREA

The greater Maputaland is endowed with heritage sites of various traditions and periods spanning the Stone Ages, Iron Ages and the historical period. However, the majority of these occur to the west of the Phongola River (approximately 20km north west of the project) in the foothills of the Lebombo Mountains. A second large concentration occurs adjacent to and on the dune gordon along the coastline. The coastal plain, by contrast to the rest of Maputaland, is devoid of known archaeological sites due to the area being covered by superficial sands and bush coverage which affect preservation and visibility (Prins 2017:2).

According to van der Walt (2015:14), people from the north moved into Eastern and Southern Africa about 2,000 years ago. These people cultivated sorghum and millets, herded cattle and small stock and manufactured iron tools and copper ornaments. As metalworking represents a new technology, archaeologists call this period the Iron Age.

In the late 1400's, a Nguni group under the leadership of Dlamini settled in the Delagoa Bay area. By the late 1700's, the Dlamini clan moved into land settling on the banks of the Pongola River where it cuts through the Lebombo Mountains. An attempt was made to occupy the area between the Pongola River and Magudu Hills (at that stage the area was under Ndwandwe rule), but the group had to retreat back across the Pongola River. Rivalry between the Ndwandwe under Zwide and the Ngwane (Swazi) under Sobhuza created a period of unrest and confrontation in the early 1800's. Magudu Hills situated approximately 30km west of the project is one of the settlement areas of the Ngwane in the early 1800's and the scene of conflict with the Ndwandwe. Another conflict site is Tshaneni Mountain, situated approximately 5km south-east of the project was also occupied by the Ndwandwe. When Shaka defeated the Ndwandwe, the head of the ruling Gaza

family, chief Soshangane, was forced to flee to Mozambique where the Gaza became founder members of the Shangaan. They still continue to see Tshaneni Mountain as their spiritual home with their chiefs buried in a cave high on the slopes the mountain. On this site in 1884, the Usutu under Dinizulu, aided by 300 mounted Boers, defeated the Mandlakazi under Zibhebu (van de Walt 2015:16).

Prior to the construction of the Pongolapoort Dam the wider dam area was Africa's first formally recognised conservation area when the Pongola Game Reserve was proclaimed in 1894. During the Depression in the 1930s, a government irrigation settlement was established on the west side of the Lebombo mountains. This settlement comprised 159 plots with a total area of 6 189 ha. A sugar mill was constructed in 1954. By 1955, plans were well advanced for the construction of a dam, to be built in the Pongolapoort and construction of the dam started in 1963 and was completed in the 1973 (Royal Jozini 2011: 1-3).

7. RESULT OF SITE INSPECTION

The 1964 aerial image of the area from the Mandlakazi WTW north-east wards shows an area with little habitation visible but with a fair amount of cultivation taking place especially along the watercourses (**Figure 2**). This is largely still the same today.

The inspection started from the Mandlakazi WTW with the pipeline route inspected largely on foot. There are several homesteads situated north/north-east and north-west of the pipeline route with many located over 20m from the proposed pipeline. At least 10 graves were found on the northern boundary of the WTW. The pipeline is located 13m south of the graves and within the boundary of the WTW.

The specialist spoke to several residents (Doris Nxumalo, Amos Nkwanyana, Lindani Dlamini and Thokozile Myeza) along the pipeline route who said that most graves were found within homestead complexes with many at the rear of the homesteads or in the fenced fields which are mostly located away from the road and pipeline route. There is existing water infrastructure near the pipeline route, including manholes, as well as a power line.

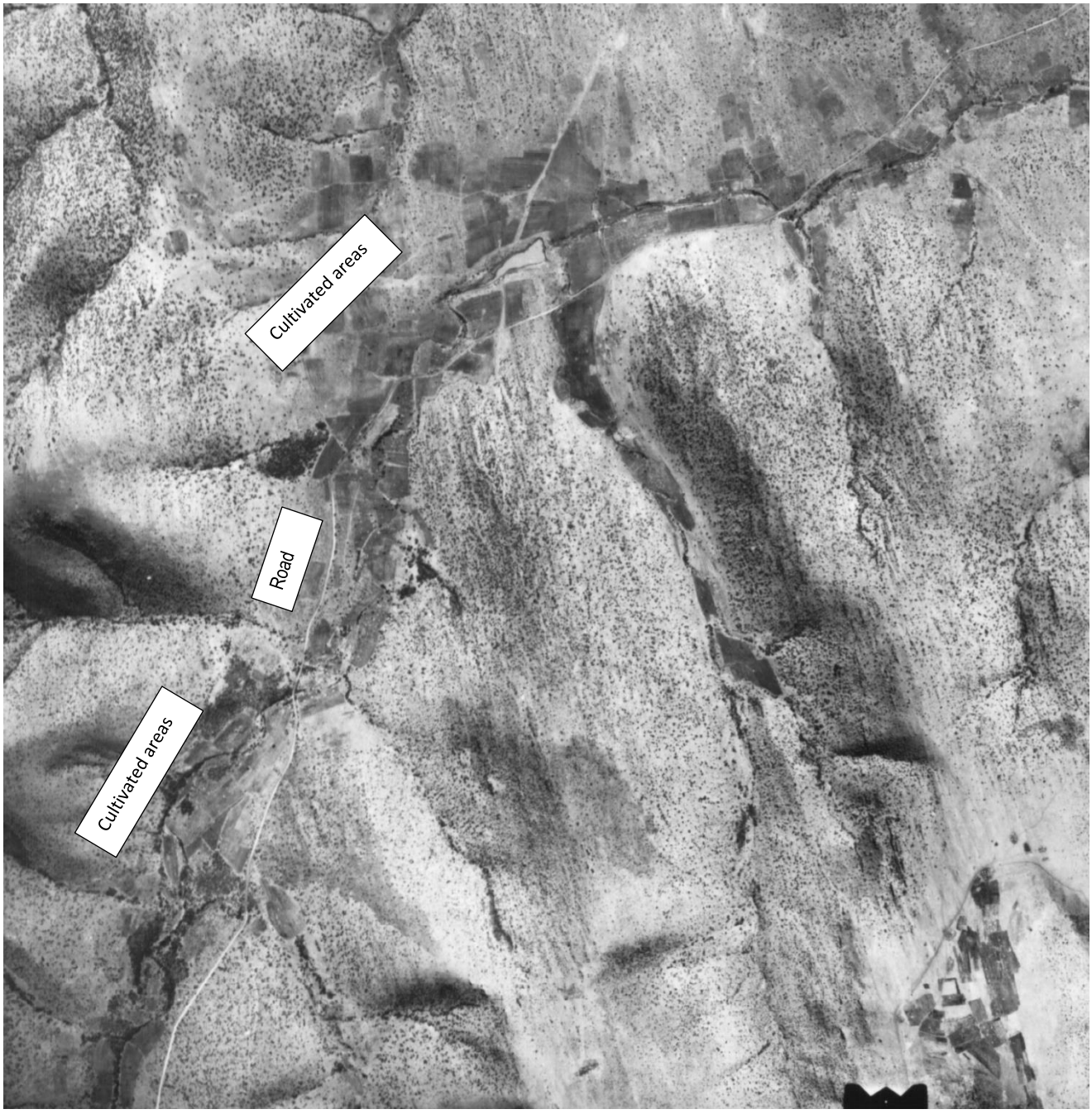

Figure 2: 1964 aerial image with road visible as well as areas of cultivation along the watercourse

Figure 3: Graves situated on northern boundary of WTW

Figure 4: Pipeline route past houses situated north of Mandlakazi WTW

Figure 5: Pipeline route with existing manhole visible

Figure 6: Distance between pipeline and homesteads

Figure 7: Headstone close to homestead and behind fenced fields

The remains of low stone walling in straight lines were found 20 metres north of the proposed pipeline route. The resident living close to the walling told the specialist that the walling had been used to demarcate fields / gardens.

Figure 8: Low stone walling

Figures 8 - 9 below show the 1943 aerial images of the section of pipeline up to and until the area of the N2 highway and town of Mkuze. The images show an area with almost no habitation until just before the road that was to become the N2 where there are some dwellings that formed part of the town of Mkuze. This area is still largely uninhabited with game farms prevalent for over 6km west of Mkuze. **Figures 10 – 11** depict the environment along which the area where it is proposed to install the pipeline. The inspection of this section of the pipeline route revealed no heritage resources.

During the inspection of the section of the pipeline that deviates to the north-east before crossing the highway, a fairly recently built pump station was found together with a reservoir (**Figures 12 - 13**). The reservoir is damaged on the one site and the pump station is no longer in use. This section of the pipeline route was heavily overgrown with vegetation.

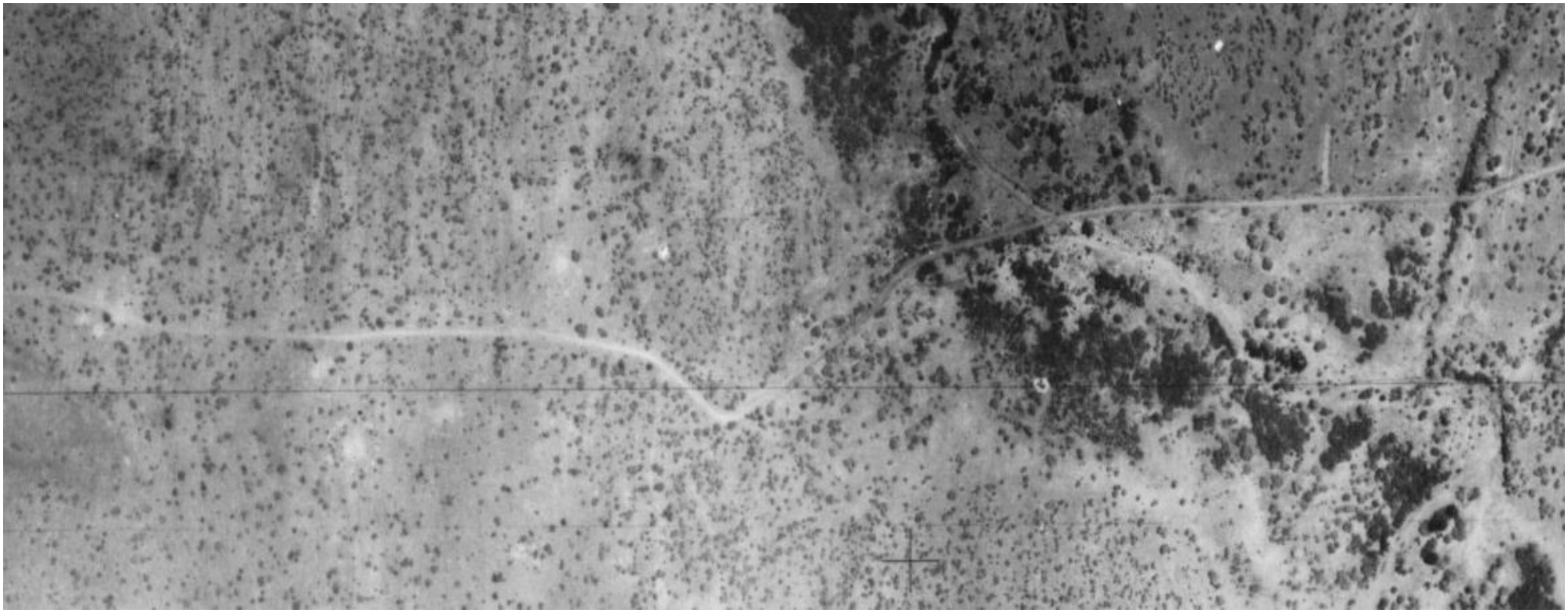

Figure 9: Middle section of area west of the N2 showing road, watercourses and little habitation

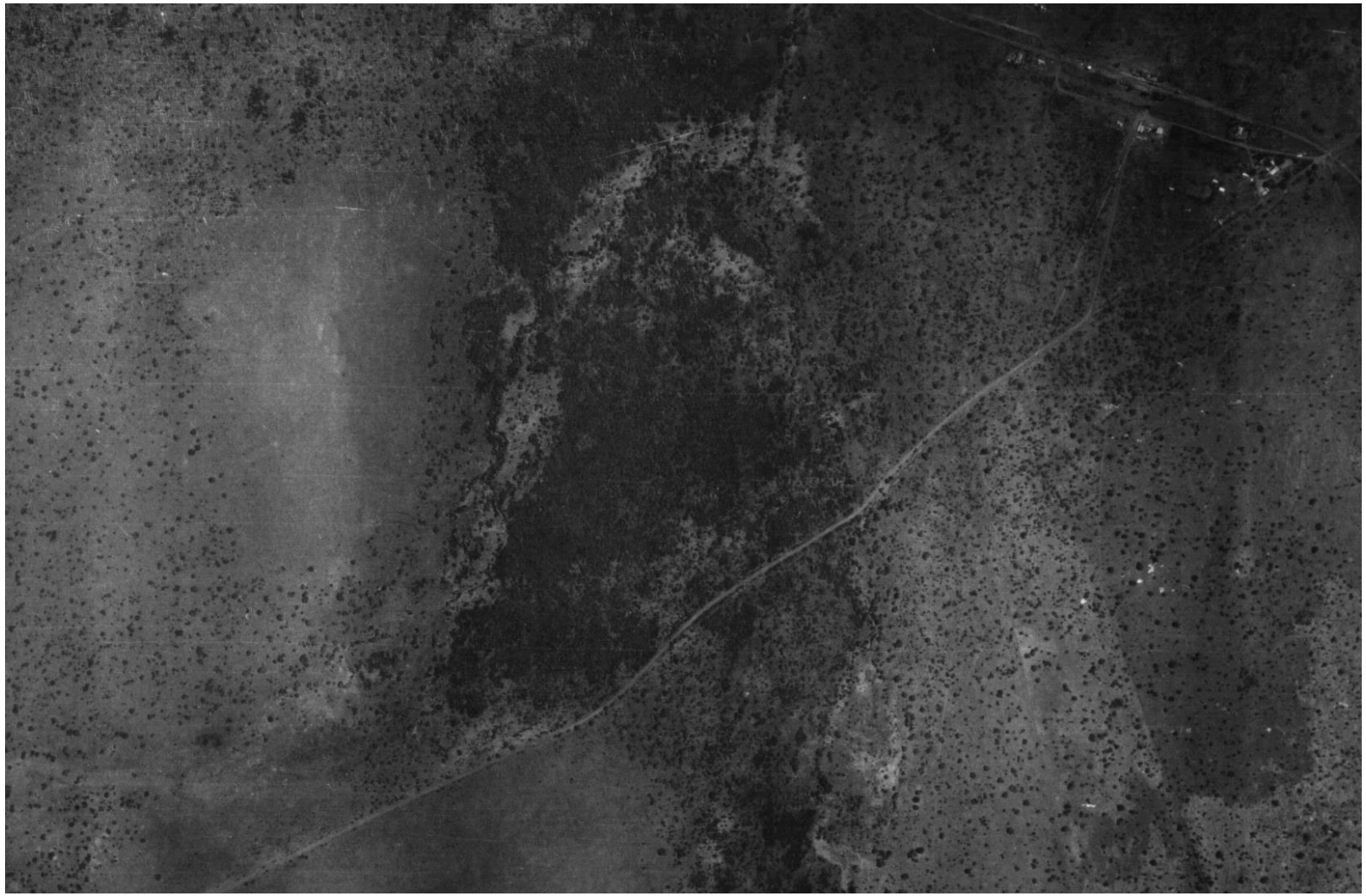

Figure 10: Section of project area immediately west of road and Mkuze

Figure 11: Pipeline route near watercourse

Figure 12: Pipeline route between road and game fence

Figure 13: Pipeline route to right of vehicle track

Figure 14: Pump station and reservoir

The pipeline route crosses the N2 highway and runs next to sugar cane fields before turning to the north to run between the road and railway line. The 1943 aerial image of this area shows the road and railway line with a bridge crossing the Mkuze River. There is very little habitation in the wider area.

Figure 15: Aerial image showing road, railway line and Mkuze River

Just before the Mkuze River, the pipeline route passes very close/through to what appears to be an abandoned water treatment works. The plant is a fairly recent structure and is below 60 years of age.

Figure 16: Pipeline route between railway line and road

Figure 17: Water treatment plant

Rail and vehicle bridges cross the Mkuze River. The rail bridge is a new addition; however, the age of the vehicle bridge could not be determined. A bridge is already in existence in 1943. Whether the existing bridge is the same bridge as depicted in 1943 aerial image (**Figure 14**) is unknown but it is possible. A structure that is older than 60 years is protected by section 37 (1)(a) of the KwaZulu-Natal Amafa and Research Institute Act, 2018, which refers to the protection of structures that are or that may reasonably be expected to be older than 60 years. The Environmental Assessment Practitioner (EAP) undertaking the environmental authorisation process for this project indicated that the Mkuze River crossing for the pipeline will involve the construction of a new stilted pipe bridge that will be located adjacent to the road.

Figure 18: Road bridge over Mkuze River

Figure 19: Road bridge with rail bridge in background

The pipeline then runs adjacent to the gravel road and close to and through sugar cane fields in a highly disturbed environment that includes power lines and a borrow pit. No heritage sites were found.

Figure 20: Pipeline route adjacent to road

Figure 21: Project environs including substation

The 1963 aerial image of much of the route shows a largely uninhabited area with many dams, some cultivated land and roads. As depicted in Figure 1 above, just before the road to Jozini and the Pongolo Nature Reserve, the pipeline route splits with a direct line to the Nature Reserve and dam and a longer alternative running along an existing farm road that then crosses into the Nature Reserve before turning north-eastwards to join the pipeline route to the dam.

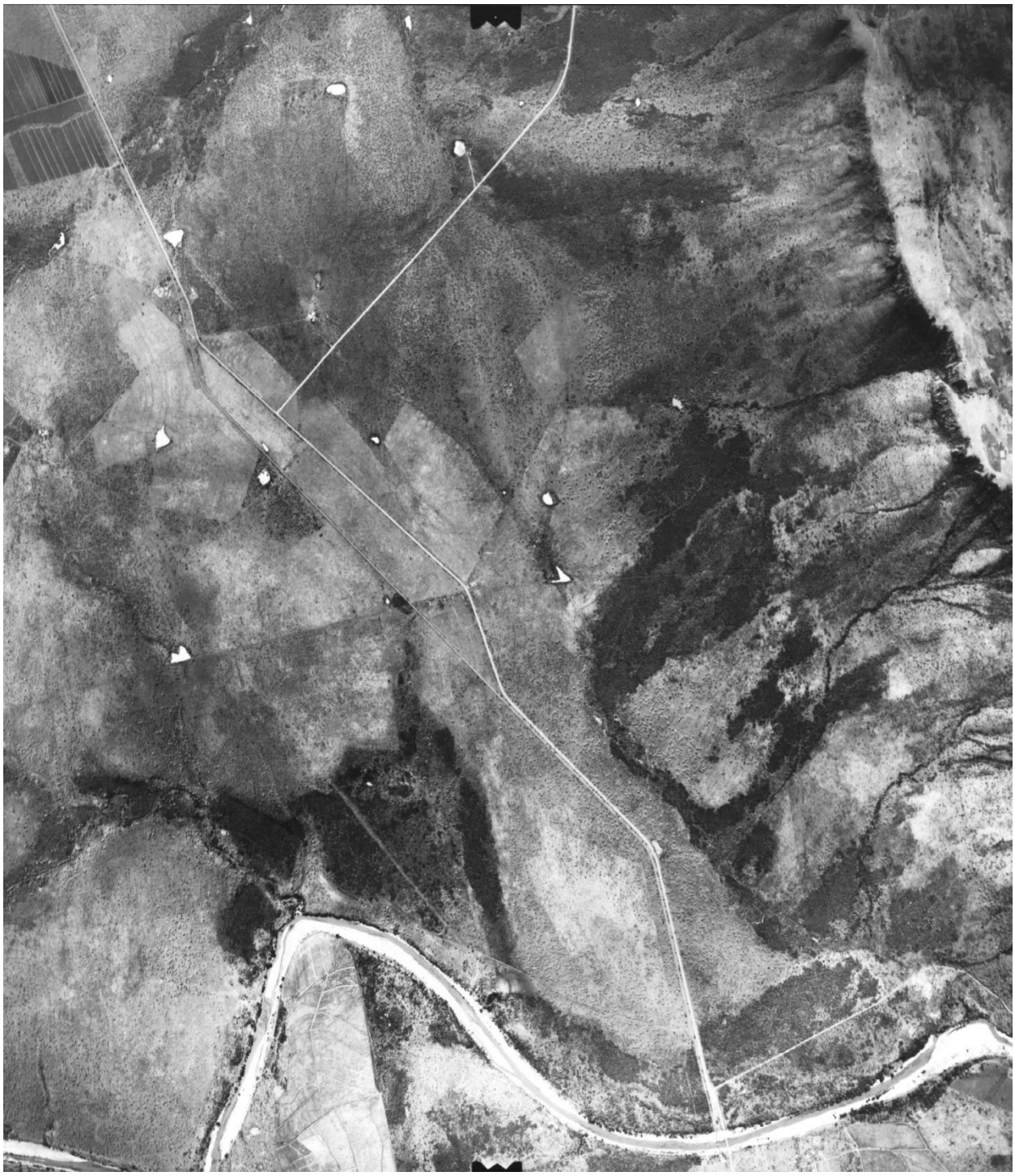

Figure 22: Aerial image of project area

The pipeline alignment then crosses the road to Jozini and enters the Pongolapoort Nature Reserve where it runs east of the gravel road. No heritage sites were found during the inspection.

Figure 23: Pipeline route in nature reserve

Figure 24: Pipeline route before abstraction point

The other alternative pipeline route runs alongside and east of the N2 highway. This alternative was inspected. The area was densely overgrown with vegetation. No heritage resources were found.

Figure 25: Pipeline route with highway in background

Heritage sites found during the site inspection are listed in **Table 1**.

Table 1: Heritage resources found during site inspection

COORDINATES	HERITAGE RESOURCE	SIGNIFICANCE + MITIGATION MEASURES
27°40'48.0" S 31°54'59.7" E	Several graves (Fig. 3)	High heritage significance; fenced buffer of 10m between graves & installation of pipeline
27°38'53.1" S 31°57'10.3" E	Low stone walling (Fig. 8)	Low heritage significance; should not be impacted by installation of pipeline
27°35'39.2" S 32°01'07.2" E	Mkuze River bridge (Figures 18 & 19)	High heritage significance if >60 years; construction of pipe bridge must not impact the vehicular bridge; if damaged in any way, an application will need to be made to the Institute for approval to repair the bridge

The fossil sensitivity map indicates that much of the pipeline and associated infrastructure falls into an area of low fossil sensitivity; however, approximately the last 4km of pipeline to the Mandlakazi WTW falls into an area of very high fossil sensitivity. An area of low fossil sensitivity indicates that no further studies are required but a protocol for chance fossil finds is required. An area of very high fossil sensitivity requires, at a minimum, a desktop palaeontological study.

A desktop palaeontological study was undertaken (see **Appendix 1**) which found that most of the proposed route lies on the basalts of the Letaba Formation (Lebombo Group, Karoo Igneous Province) that is very unlikely to preserve any fossils, especially not in the overlying soils that will be excavated. Only the southwestern section lies on potentially fossiliferous Ntabeni and Nyoka Formations but this route is the same as an existing pipeline. No fossils are known from these formations as the geological structures suggest that the rocks are the wrong type to contain fossils. Furthermore, the material to be excavated is soil and this does not preserve fossils. It was, however, recommended that a Fossil Chance Find Protocol should be added to the Environmental Management Programme (EMPr). It was also recommended that no further palaeontological impact assessment is required unless fossils are found by the developer/ environmental officer/ other designated responsible person once excavations activities have commenced. As far as the palaeontology is concerned, the project should be authorised.

8. ASSESSMENT OF SIGNIFICANCE OF IMPACTS

The assessment of significance of impacts on heritage resources identified during the site inspection has been undertaken in terms of the following criteria:

- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high).
- The **duration**, wherein it will be indicated whether:
    - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
    - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
    - medium-term (5–15 years) – assigned a score of 3;
    - long term (> 15 years) - assigned a score of 4; or
    - permanent - assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.

- The **probability** of occurrence, which shall describe the likelihood of the impact occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- The **status**, which will be described as either positive, negative or neutral.
- The degree to which the impact can be mitigated.

The following formula was applied to calculate the impact significance after the factors were ranked for each impact: SP = (magnitude + duration + scale) x probability.

The significance weightings for each potential impact are as follows:

- < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- >60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

Table 2: Assessment of impact on graves

Nature: Alteration, damage, destruction of graves		
	Without mitigation	***With mitigation***
Extent	*Local (1)*	*Local (1)*
Duration	*Permanent (5)*	*Permanent (5)*
Magnitude	*High (8)*	*Moderate (6)*
Probability	*Probable (3)*	*Improbable (2)*
Significance	***42 (Medium)***	***24 (Low)***
Status (positive or negative)	*Negative*	*Negative*
Reversibility	*None*	*Low*
Irreplaceable loss of resources	*Yes*	*Yes*
Can impacts be mitigated?	*Yes*	

Mitigation measures

- *12m fenced buffer around graves in which no construction activities may take place.*
- *The buffer area must be clearly demarcated and visible to construction crews*
- *If any of the graves are damaged during construction, then work must stop in the immediate vicinity and the graves must be rehabilitated to its previous condition. If the graves are >60 years, then the Institute must be informed and the necessary permits obtained from the Institute for the repair to the grave/s prior to work been undertaken on them.*
- *If it is decided that grave/s are to be moved, then the procedure stipulated in section 5 of the Draft KwaZulu-Natal & Research Institute Regulations, 2021 must be followed. The section refers to the application process to be undertaken for the damage, alteration, exhumation or removal from its original position or any other disturbance of a grave in a traditional burial place or not located in a formal cemetery*

Cumulative impacts: *Low-medium*

Table 3: Assessment of impacts on archaeological site

Nature: Alteration, damage, destruction of stone walling

	Without mitigation	***With mitigation***
Extent	*Local (1)*	*Local (1)*
Duration	*Permanent (5)*	*Permanent (5)*
Magnitude	*Low (4)*	*Minor (2)*
Probability	*Improbable (2)*	*Improbable (2)*
Significance	***20 (Low)***	***16 (Low)***
Status (positive or negative)	*Negative*	*Negative*
Reversibility	*None*	*Low*
Irreplaceable loss of resources	*Yes*	*Yes*
Can impacts be mitigated?	*Yes*	

Mitigation measures

- *12m buffer around stone walling in which no construction activities may take place.*
- *The buffer area must be clearly demarcated and visible to construction crews*
- *If the stone walling is damaged during construction, then work must stop in the immediate vicinity and the grave must be rehabilitated to its previous condition. If the graves are >60 years, then the Institute must be informed and the necessary permits obtained from the Institute for the repair to the grave/s.*
- *If it is decided that the stonewalling needs to be destroyed, then grave/s are to be moved, then the procedure stipulated in section 6 of the Draft KwaZulu-Natal & Research Institute Regulations, 2021 must be followed. The section refers to the application process to be undertaken if it is planned to destroy, damage, excavate, alter, write or draw upon, or otherwise disturb the walling*

Cumulative impacts: *Low-medium*

Table 4: Assessment of impact on protected structures

Nature: Alteration, damage, destruction of protected structures		
	Without mitigation	***With mitigation***
Extent	*Local (1)*	*Local (1)*
Duration	*Permanent (5)*	*Permanent (5)*
Magnitude	*Moderate (6)*	*Low (4)*
Probability	*Probable (3)*	*Improbable (2)*
Significance	***36 (Medium)***	***20 (Low)***
Status (positive or negative)	*Negative*	*Negative*
Reversibility	*None*	*Low*
Irreplaceable loss of resources	*Yes*	*Yes*
Can impacts be mitigated?	*Yes*	
Mitigation measures • *Prior to the destruction of any structures that could potentially be >60 years, a built heritage specialist must assess the structure to confirm it's age.* • *If the structure is >60 years and if it is possible, it should be left intact. However, if this is not possible, then written application must be made to the Institute according to the procedure stipulated in section 3 of the Draft KwaZulu-Natal & Research Institute Regulations, 2021 or section 2 of the KwaZulu-Natal Heritage Regulations 2012 if the 2021 regulations have not been officially promulgated by the time an application is made.* • *If a protected structure is damaged accidently, then all work must stop in the immediate vicinity of the damage structure, the Institute informed and a qualified specialist appointed to repair the building once all necessary permits have been obtained from the Institute*		
Cumulative impacts: *Low-medium*		

9. DISCUSSION AND CONCLUSION

During the site inspection, several heritage sites were found including a number of graves in an informal burial area. In terms of section 39 (1) of the KwaZulu-Natal Amafa and Research Institute Act, graves or burial grounds older than 60 years or deemed to be of heritage significance by a heritage authority- (a) not otherwise protected by the above Act and (b) not located in a formal cemetery managed or administered by a local authority, may not be damaged, altered, exhumed, inundated, removed from its original position, or otherwise disturbed without the prior written approval of the Institute having been obtained on written application to the Institute. Graves are highly significant to many people and there are many traditional, cultural and personal sensitivities and norms concerning damage to graves or the relocation of graves. It is recommended that graves are not moved and that they are fenced to avoid any damage to them during the installation of the proposed pipeline. If, for whatever reason, the graves will need to be altered or moved, the

procedure provided in section 5 of the Draft KwaZulu-Natal & Research Institute Regulations, 2021 must be followed.

According to the assessment of impacts, if the recommended mitigation measures are implemented, then the impact will go from a medium impact, where the impact could influence the decision to develop in the area unless it is effectively mitigated to a low impact, where the impact would not have a direct influence on the decision to develop.

The low stone walling, which is found in the area and across the province, is of low heritage significance and should not be impacted by the installation of the pipeline. A 12m buffer must be placed around the walling to avoid construction activity impacts. If the walling is impacted, then application will need to be made to the Institute for permission to repair the damage as the walling is protected by section 40 (1) of the KwaZulu-Natal Amafa and Research Institute Act, 2018, no person may destroy, damage, excavate, alter, write or draw upon or otherwise disturbed any battlefield, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without written permission of the Institute having been obtained on written application to the Institute.

The assessment of impacts indicated that the impact of the proposed BWSS would be a low impact both pre- and post the implementation of mitigation measures hence not influencing the decision to construct the Mandlakazi BWSS.

The vehicular bridge that crosses the Mkuze River is probably over 60 years hence protected by section 37 (1)(a) of the KwaZulu-Natal Amafa and Research Institute Act, which refers to the protection of structures that are or that may reasonably be expected to be older than 60 years. It is recommended that the bridge is not impacted in any way by the project. However, if the bridge is to be impacted or is impacted in any way, then application must be made to the Institute in terms of the process described in section 3 of the draft KwaZulu-Natal & Research Institute Regulations, 2021 or section 2 of the KwaZulu-Natal Heritage Regulations 2012 if the 2021 regulations have not been officially promulgated by the time an application is made.

According to the assessment of impacts, if the recommended mitigation measures are implemented, then the impact will go from a medium impact, where the impact could influence the decision to develop in the area unless it is effectively mitigated to a low impact, where the impact would not have a direct influence on the decision to develop.

In terms of the alternatives, it is recommended that the alternative running alongside the N2 is utilised as no heritage resources will be impacted by this route. The original route that crosses the Mkuze River may impact the vehicular bridge which could be older than 60 years.

If the original route is used, then it is recommended that the more direct pipeline route to the Pongola Nature Reserve is utilised as it is shorter and therefore should have less impact on heritage resources.

The installation of the proposed Mandlakazi Phase 1 BWSS can proceed as long as the recommendations and mitigation measures provided in this report and in the desktop palaeontological report are implemented.

10. MITIGATION MEASURES

- For any chance heritage finds, all work must cease in the area affected and the Contractor must immediately inform the Project Manager. A heritage specialist must be called to site to inspect the finding/s. The relevant heritage resource agency (the Institute) must be informed about the finding/s.
- The specialist will assess the significance of the resource/s and provide guidance on the way forward.
- Permits must be obtained from the Institute if heritage resources are to be removed, destroyed or altered.
- Under no circumstances may any heritage material be destroyed or removed from the project site unless under direction of a heritage specialist.
- Should any recent remains be found on site that could potentially be human remains, the South African Police Service as well as the Institute must be contacted. No SAPS official may remove remains (recent or not) until the correct permit/s have been obtained.
- A Fossil Chance Find Protocol must be included in the EMPr for the proposed installation of the BWSS.

11. REFERENCES

Bamford, M. 2022. *Palaeontological Impact Assessment for the proposed Mandlakazi water supply, Mkuze, Northern KwaZulu Natal Province. Desktop study (Phase 1)*

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