PROPOSED MINING OF TWO EXISTING BORROW PITS FOR UPGRADE OF ROAD P77, VULAMEHLO LOCAL MUNICIPALITY, KWAZULU-NATAL

Phase 1 Heritage Impact Assessment

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EXECUTIVE SUMMARY

The applicant proposes to mine two existing borrow pits located alongside the upgrade of Road P77 located in Dududu, Vulamehlo Local Municipality which falls in the Ugu district municipality. The purpose of the borrow pits are to provide a sustainable supply of aggregate material for the upgrade of Road P77 within the area it is located.

The area to be mined in existing borrow pit 1 is 0,592ha and the area to be mined at borrow pit 2 is 0,3224ha hence the extent of mining of both sites triggers section 41 (1) (c)(i) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act No 5 of 2018) which lists developments or activities that require an HIA. The relevant sub-section refers to: any development or other activity which will change the character of a site- (i) exceeding 5000 m².

The two borrow pits are situated alongside the P77 road in Ward 3 of the Vulamehlo Local Municipality. Borrow pit 1 is located on the farm Mount Lewis, Portion 0/6185 and borrow pit 2 is located on the farm Mount McAndrew, Portion 0/16096. An inspection of the project site was undertaken on 02 March 2021. Visibility was hampered by thick grass layer and dense vegetation at both sites.

Borrow pit 1: The area of the borrow pit has been occupied since the 1960s and most probably earlier than this. The 1968 map of the area (3030BA) shows three dwellings at or near the location of the borrow pit. During the years after 1968, more homesteads were erected. Most of the dwellings have been demolished; however, there is at least one homestead that is still used that is located within 15m of the existing borrow pit. The remains of several dwellings close to and in the surrounding area of the borrow pit were inspected and graves found during the inspection.

<u>Borrow pit 2</u>: An occupied homestead is located approximately 44m north-west of the existing borrow pit. The elderly woman who resides there told the specialist that there are graves within the homestead. The homestead and associated graves must be avoided by the mining of the borrow pit.

She also mentioned that there are 2 to 3 graves under or close to one of the large euphorbias on the crest of the hill. The graves belong the Mhlongo family. The area could not be accessed due to very dense vegetation. It was with great difficulty that the remains of three homestead sites were accessed, photographed and documented. Although no graves were found during the inspection at these sites, there is a high possibility that there are graves associated with these homesteads.

According to the South African fossil sensitivity map, both borrow pits fall into zones of insignificant fossil sensitivity therefore no further studies are required.

An assessment of significance of both borrow pits shows that without mitigation, the mining of the borrow pits would have a low impact on graves and other heritage resources as long as the recommendations made in this report are implemented.

Borrow pit 1: As long as the proposed mining of the borrow does not extend beyond the extent that has been provided by the applicant, mining can proceed. It is recommended that all graves in the surrounding area should be left *in situ*.

Borrow pit 2: Due to the presence of graves, a 'no-go' area is recommended where no mining takes place due to the possibility that graves will be impacted. The mining of the borrow pit should have no impact as long as the extent of the proposed mining as provided by the applicant remains unchanged.

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I, Jean 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)	Member of Association of
	MSc (Environmental Management)	South African Professional Archaeologists (No. 349)
		Member of IAIAsa (No. 1538)

1. INTRODUCTION

The applicant proposes to mine two existing borrow pits located alongside the upgrade of Road P77 located in Dududu, Vulamehlo Local Municipality which falls in the Ugu district municipality. The purpose of the borrow pits are to provide a sustainable supply of aggregate material for the upgrade of Road P77 within the area it is located.

The Phase I HIA was undertaken to assess whether any heritage resources will be impacted by the mining of the two existing borrow pits which are named borrow pit 1 and borrow pit 2.

2. LEGISLATIVE BACKGROUND

The area to be mined in existing borrow pit 1 is 0,592ha and the area to be mined at borrow pit 2 is 0,3224ha hence the extent of mining of both sites triggers section 41 (1) (c)(i) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act No 5 of 2018) which lists developments or activities that require an HIA. The relevant sub-section refers to: "any development or other activity which will change the character of a site- (i) exceeding 5000 m²".

The mining of the borrow pits 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 NHRA, 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 two borrow pits are situated alongside the P77 road in Ward 3 of the Vulamehlo Local Municipality. Borrow pit 1 is located on the farm Mount Lewis, Portion 0/6185 and borrow pit 2 is located on the farm Mount McAndrew, Portion 0/16096 (see **Figures 1 – 3**).

Borrow pit 1 is located at $30^{\circ}11'56.81''$ S $30^{\circ}33'55.78''$ E and borrow pit 2 is located at $30^{\circ}11'37.21''$ S $30^{\circ}32'45.57''$ E.



Figure 1: Aerial image of both sites



Figure 2: Aerial view of borrow pit 1



Figure 3: Aerial view of borrow pit 2

4. TERMS OF REFERENCE

Undertake a Phase 1 Heritage Impact Assessment in order to determine the possible existence of heritage resources, as listed above, that could be impacted by the mining of the borrow pits. 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, the KwaZulu-Natal Amafa and Research Institute (hereafter referred to as the Institute), for their assessment and comment.

5. METHODOLOGY AND CONSTRAINTS

A survey of literature, including other heritage impact assessment reports that may have been 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 project site was undertaken on 02 March 2021. Visibility was hampered by thick grass layer and dense vegetation at both sites.

6. HISTORICAL BACKGROUND OF PROJECT AND SURROUNDING AREA

Archaeological evidence shows that Bantu-speaking agriculturists first settled in southern Africa around AD 300. The earliest agricultural sites in KwaZulu-Natal date to between AD 400 and 550. All are situated close to sources of iron ore, and within 15 km of the coast. Current evidence suggests it may have been too dry further inland at this time for successful cultivation. From 650 onwards, however, climatic conditions improved and agriculturists expanded into the valleys of KwaZulu-Natal, where they settled close to rivers in savanna or bushveld environments (eThembeni 2013:18).

Dududu is a small rural area inland of the South Coast of the KwaZulu-Natal. It is also referred to as Zembeni by local inhabitants. The area is primarily used for agriculture including sugarcane plantations by the Illovo Sugar company. Dududu lies at the edge of a massive rock known as Tshenkombo, a name derived from Zulu words etsheni laNkombo, which translate to Nkombo's

rock. Elderly inhabitants believed Nkombo was a giant snake that resided under the rock. At the top of Tshenkombo, there is clear view of the Umkomaas river flowing down from its source

In 2015, Dududu was in the news. Graves were found on Glenroy Farm. The burial of bodies of prison labourers on a South Coast farm was apparently an open secret in the community. The winds in Zembeni in the town of Dududu have long been whispering tales of the remains of prisoners buried in mass graves on three sites on Glenroy Farm. A newspaper spoke to the community surrounding the now infamous sugar cane farm on which three mass graves were discovered late last year. The owner of the farm is dead and the farm was sold to the Illovo Sugar Group almost 30 years ago. The details of how the prisoners died differ from person to person. Some believe those buried at the farm died of old age; others from illness or exhaustion. Yet still others believe the prisoners were beaten or shot. The sites remain overgrown with bush and untouched (Mngoma & Pillay 2015:1-3).

7. RESULT OF SITE INSPECTION

Borrow pit 1:

The area above the borrow pit has been occupied since the 1960s and most probably earlier than this. The earliest map that the specialist could find on the Department of Rural Development and Land Reform's CDNGI Geospatial Portal (www.cdngiportal.co.za) was the 1968 map of the area (3030BA) that shows three dwellings at or near the location of the borrow pit (**Figure 4**).

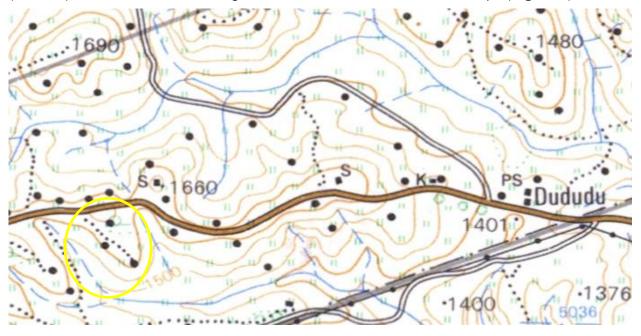


Figure 4: 1968 topographical map with borrow pit area outlined in yellow

During the years, more dwellings have been erected near the borrow pit. Most of these dwellings have been demolished; however, there is at least one homestead that is still used that is located within 15m of the edge of the existing borrow pit. The remains of several dwellings close to and in the surrounding area of the borrow pit were inspected and graves were found during the site inspection. The sites are listed in **Table 1** below.

Table 1: Borrow pit 1 heritage sites

NUMBER	COORDINATES	DESCRIPTION	MITIGATION
1	30°12'05.7" S; 30°33'50.2" E	3 partially demolished homesteads (Figure 6)	Can be demolished
2	30°12'05.0" S; 30°33'50.8" E	Two graves – rectangular in shape outlined with cinder blocks (Figure 7)	10 m buffer around graves in which no activity may take place
3	30°12'04.7" S; 30°33'50.9" E	1 grave located about 5 m north of above graves; headstone no inscription, rectangular in shape (Figure 8)	10 m buffer around grave in which no activity may take place
4	30°12'03.7" S; 30°33'56.2" E	Partially demolished house (Figure 9)	No graves were found but this could be due to thick vegetation cover.
5	30°12'06.3" S; 30°33'57.1" E	Remains of four structures	No graves were found but could be due to thick vegetation cover.
6	30°12'06.5" S; 30°33'57.7" E	Possible grave/s, very overgrown	To be confirmed once vegetation cleared
7	30°12'07.7" S; 30°33'59.0" E 30°12'07.4" S;	Remains of 3 houses Remains of 1 house	No graves were found. If necessary, this can be ascertained once vegetation cleared
	30°33'59.7" E		
8	30°12'04.9" S; 30°34'01.2" E	Potential grave	To be confirmed once vegetation cleared
9	30°12'04.7" S; 30°34'01.2" E	Potential grave	To be confirmed once vegetation cleared
10	30°12'04.4" S; 30°34'00.9" E	Remains of structure	No mitigation
11	30°12'01.9" S; 30°34'00.3" E	Remains of four structures	No graves found due to thick vegetation
12	30°12'02.03" S; 30°33'59.5" E	Grave or rubble from remains of structure located in dense bush	Vegetation to be cleared in order to confirm finding
13	30°12'01.7" S; 30°34'00.4" E	Potential grave	To be confirmed once vegetation cleared
14	30°12'01.3" S; 30°33'59.7" E	Remains of 2 structures	No graves found due to thick vegetation.
15	30°11'59.6" S; 30°33'58.9" E	Remains of structures	No graves found due to thick vegetation.
16	30°11'59.3" S; 30°33'57.2" E	1 grave with concrete headstone / marker (Figure 10)	10 m buffer around grave in which no activity may take place

17	30°11'59.6" S; 30°33'57.2" E	Neglected/derelict homestead with adjoining demolished structure	No further graves found but clearing of the dense vegetation could reveal more graves
	30°11'57.1" S; 30°33'57.6" E	Grave immediately below homestead that is resided in; barely visible	10 m buffer around grave in which no activity may take place



Figure 5: Existing borrow pit 1

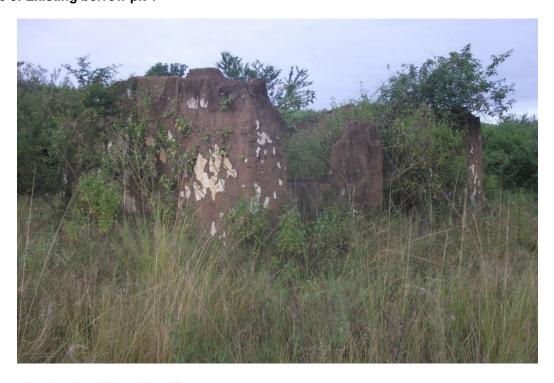


Figure 6: Partly demolished dwelling



Figure 7: Grave



Figure 8: Single grave with headstone



Figure 9: Remains of circular structure



Figure 10: Grave with concrete marker

The extent of the proposed mining in borrow pit 1 and the location of heritage sites found during the site inspection can be seen in **Figure 11**. The extent of mining is indicated with a red outline.

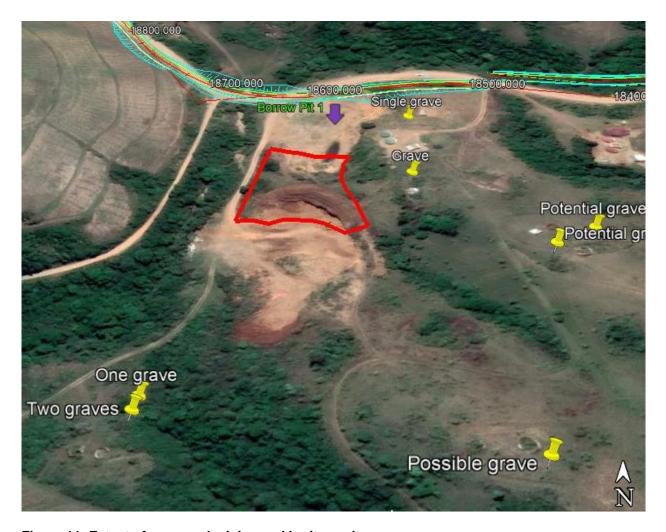


Figure 11: Extent of proposed mining and heritage sites

Borrow pit 2:

A homestead is located approximately 44m north-west of the existing borrow pit. The elderly woman who resides there, Noma Cele, told the specialist that there are graves within the homestead. She was not agreeable to the specialist entering the homestead and recording the graves. The homestead and associated graves must be avoided by the mining of the borrow pit.

Mrs. Cele did however mention that there are 2 to 3 graves under or close to one of the large euphorbias on the crest of the hill. The graves belong the Mhlongo family. The area could not be accessed due to very dense vegetation. It was with difficulty that the remains of three homestead sites were accessed, photographed and documented below in **Table 2**. Although no graves were found during the inspection at these sites, there is a high possibility that there are graves associated with these homesteads. A 'no-go' area outlined in purple is indicated on **Figure 16** below where no mining can take place.

Table 2: Borrow pit 2 heritage sites

NUMBER	COORDINATES	DESCRIPTION	MITIGATION
1	30°11'35.69" S; 30°32'42.85" E approximate centre of homestead	Homestead with several associated buildings and graves	Falls within no-go area where no mining or other activity is allowed
2	30°11'37.1" S; 30°32'39.4" E	Remains of homestead (Figure 13)	Falls within no-go area where no mining or other activity is allowed
3	30°11'35.1" S; 30°32'40.3" E	Remains of homestead	Falls within no-go area where no mining or other activity is allowed
4	30°11'34.4" S; 30°32'38.5" E	Remains of homestead with 3 structures (Figure 15)	Falls within no-go area where no mining or other activity is allowed
5	Approximate position 30°11'36.7" S; 30°32'40.2" E or 30°11'37.0" S; 30°32'40.7" E	Mhlongo graves; 2 – 3 graves	Falls within no-go area where no mining or other activity is allowed



Figure 12: Existing borrow pit 2



Figure 13: Remains of structure



Figure 14: Remains of structure amongst dense vegetation



Figure 15: Remains of white painted structure

The extent of the proposed mining in borrow pit 1 and the location of heritage sites found during the site inspection can be seen in **Figure 16**. The extent of mining is indicated in red.



Figure 16: Extent of mining in relation to heritage sites

According to the South African fossil sensitivity map, both borrow pits fall into zones of insignificant fossil sensitivity as indicated by the grey colour in **Figure 17** below. No further studies are therefore required.

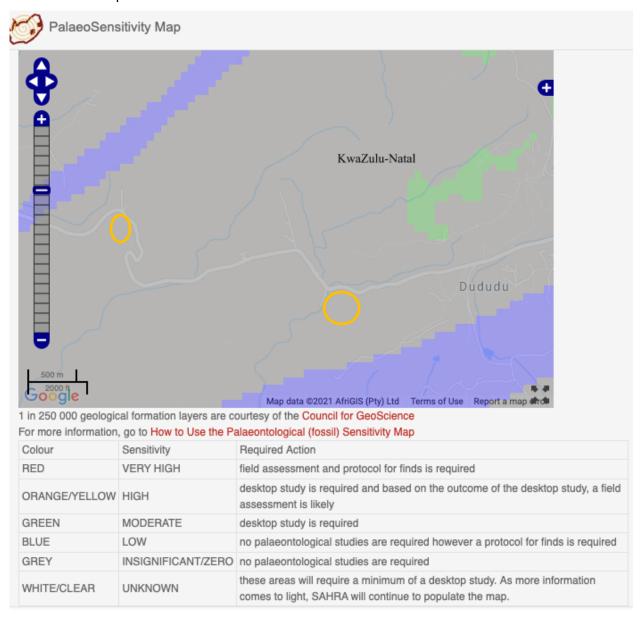


Figure 17: Fossil sensitivity of borrow pit sites as indicated by orange outlines

8. ASSESSMENT OF SIGNIFICANCE

The assessment of impacts has considered the direct, indirect and cumulative impacts of heritage resources identified during the Phase 1 HIA study 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;
 - o long term (> 15 years) assigned a score of 4; or
 - o 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: $SP = (magnitude + duration + scale) \times probability$.

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 3: Impact assessment: borrow pit 1

	Without mitigation	With mitigation
extent	Local (1)	Local (1)
Duration	Permanent (5)	Long-term (4)
Magnitude	High (8)	Moderate (6)
Probability	Improbable (2)	Improbable (2) if
Significance	28 (Low)	22 (Low)
Status (positive or negative)	Negative	Negative
Reversibility	None	Low
rreplaceable loss of resources	Yes	Yes
Can impacts be mitigated?	Yes	

Mitigation measures

- Mining of the existing borrow pit takes place only within the proposed extent as indicated in **Figure 11**.
- The closest grave site is located approximately 37 m east of the area where mining is proposed. The grave is situated
 close to the edge of the borrow pit. Care should be taken to avoid taking further material from the eastern edge of
 the borrow pit to avoid the grave and associated structures from collapsing into the borrow pit

Cumulative impacts: Moderate

Table 4: Impact assessment: borrow pit 2

	Without mitigation	With mitigation
xtent	Local (1)	Local (1)
Duration	Permanent (5)	Long-term (4)
Magnitude	Moderate (6)	Low (4)
robability	Improbable (2)	Improbable (2)
ignificance	24 (Low)	18 (Low)
tatus (positive or negative)	Negative	Negative
Peversibility	None	Low
replaceable loss of resources	Yes	Yes
Can impacts be mitigated?	Yes	

Mitigation measures

- Mining of the existing quarry takes place only within the area outlined in Figure 16.
- No activity whatsoever may be allowed within the 'no-go' area.

Cumulative impacts: Moderate

9. DISCUSSION AND RECOMMENDATIONS

The assessment of significance shows that without mitigation, the mining of borrow pit 1 will have a low impact and that with mitigation the significance rating drops to an even lower rating. All of the heritage sites identified during the site inspection apart from one grave are located well outside the area to be mined. This rating is based on the understanding that the mining of the borrow pit will remain within the proposed extent as indicated in **Figure 11**. All additional recommendations and mitigation measures provided in this report must also be adhered to.

In terms of borrow pit 2, the assessment of significance indicates that the impact of the proposed mining will have a low impact as long as the mining remains within the proposed extent as indicated in **Figure 16**. All additional recommendations and mitigation measures provided in this report must also be adhered to.

10. CONCLUSION

The mining of both borrow pits can proceed as long as the extent of mining proposed is not extended so that the heritage sites found near the borrow pits are not impacted by mining activities.

11. MITIGATION MEASURES

- For any chance heritage finds (graves, archaeological sites, etc.), all work must cease in the
 area affected and the Contractor must immediately inform the Project Manager. A registered
 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 heritage specialist will assess the significance of the resource 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 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.

12. REFERENCES

eThembeni Cultural Heritage. 2013. Phase 1 Heritage Impact Assessment Report: Proposed Site Clearance for the Construction of a New SAPS Dududu Police Station, Vulamehlo Local Municipality, Ugu District, KwaZulu-Natal

Mngoma, N. and Pillay, K. 2015. *KZN burial site an open secret*. (https://www.iol.co.za/news/south-africa/kwazulu-natal/kzn-burial-site-an-open-secret-1833266)

Wikipedia. 2017. Dududu. (https://en.wikipedia.org/w/index.php?title=Dududu&oldid=797374143)