ADDENDUM: UPDATED IMPACT ASSESSMENT FOR PHASE 1 HERITAGE IMPACT ASSESSMENT: CATO RIDGE LAND DEVELOPMENT AND RELEASE PROJECT, ETHEKWINI MUNICIPALITY, KWAZULU-NATAL

14 October 2022

FOR: **Zutari (Pty) Ltd**
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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) MSc (Environmental Management)	Affiliate Member of Association of South African Professional Archaeologists (No. 349) Member of IAIAsa (No. 1538)

1. INTRODUCTION

JLB Consulting was appointed by Zutari (Pty) Ltd on behalf of the Cato Ridge Development Company (CRDC) to update the impact assessment that was undertaken for the Phase 1 Heritage Impact Assessment (HIA) for three proposed development areas (now referred to as Phases 1, 2 and 3) in Cato Ridge.

Due to ecological restrictions, the original footprint of the development has been reduced. In addition, the release of the land to enable warehousing and logistics development will be done in three phases. This has resulted that the significance impact assessment that was undertaken for the Phase 1 HIA needs to be updated in order to take into account the reduced footprint of the proposed development.

2. LEGISLATION

A Phase 1 HIA was undertaken as the original size of the development was 547.49 ha which triggered sections 41 (1)(c) (i) (ii) and (iii) 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) (c) refers to:

- any development or other activity which will change the character of a site– exceeding 5000 m² in extent;
- (ii) any development or other activity involving three or more existing erven or subdivisions thereof; and
- (iii) any development or other activity involving three or more erven or divisions thereof which have been consolidated within the past five years.

The reduced size of the development is 367 ha, with approx. 313 ha available for warehousing/ logistics/light industry activities and the remaining 54 ha spread across various pieces of infrastructure such as roads, reservoirs, sewerage package plant, substations etc.

The proposed development may 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.

Section 3 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) describes heritage resources as follows:

(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. PROJECT LOCATION

The study area is located in Cato Ridge near the western boundary of the eThekwini Metropolitan Municipality, KwaZulu Natal and is situated to the north of the N3 highway. Cato Ridge is located approximately 51km west of Durban via the N3 and 29km south-east of Pietermaritzburg. The R103, which acts as an alternative route between Durban and Pietermaritzburg, bisects the study area. A railway line, the Natal Corridor (Natcor), also divides the area and provides general

accessibility to the informal and agricultural areas in the north and south. Assmang and its subsidiary company, CRDC, have an operational manganese smelter (Cato Ridge Works) to the west of the study area (Zutari 2021:1).

The three areas which will be released in phases are depicted in **Fig. 1** with Phase 1 indicated in blue, Phase 2 indicated with pink or cerise and Phase 3 indicated with yellow. **Fig. 2** (provided by the Environmental Assessment Practitioner) shows the three parcels of land to be released with their size indicated. **Fig. 3** shows the final consolidated layout plan that shows the bulk services to be provided for the development.

Proposed engineering bulk services will include (Zutari 2022).

- An onsite sewerage package plant will be established at the intersection of the R103 and Eddie Hagen (Phase 1), which will have a treatment capacity of appropriately 2 Ml. The effluent will be discharged via a pipeline, leading from Portion 50, across the R103, into the North eastern corner of Phase 3, in which the treated effluent will be disposed of into the existing wetland. In order to service the sewerage requirements for Phase 3 development area, a collection point and pumpstation will be required to pump the raw sewerage from Phase 3 into Phase 1 development area in which the onsite sewerage treatment plant will be located at the intersection of Eddie Hagen and R103.
- To meet the water requirements for the development, eThekwini Metro will need to construct a 38ML above ground reservoir within the central parts of Phase 2 development area, which will be subject to a separate Environmental Impact Assessment (EIA) and Water Use Licence Application (WULA) process.
- Although most of the development will be serviced by underground powerlines, a small section of above ground powerlines will be required along the northern border of Phase 1 development area.
- Stormwater management will be completed per site, with the required infrastructure, and
- An internal road reticulation network.

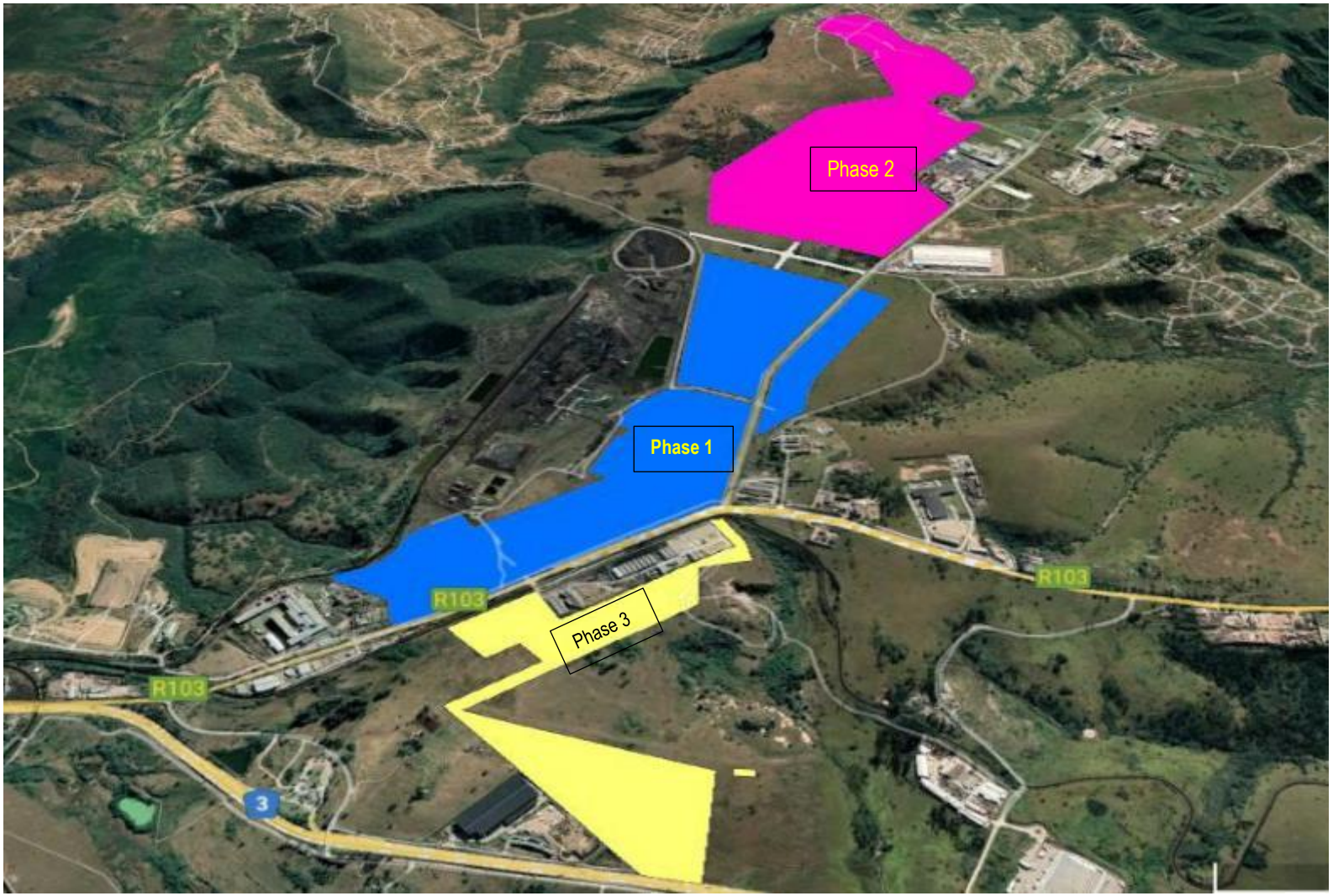

Figure 1: Google Earth image of three phases of land to be released for development

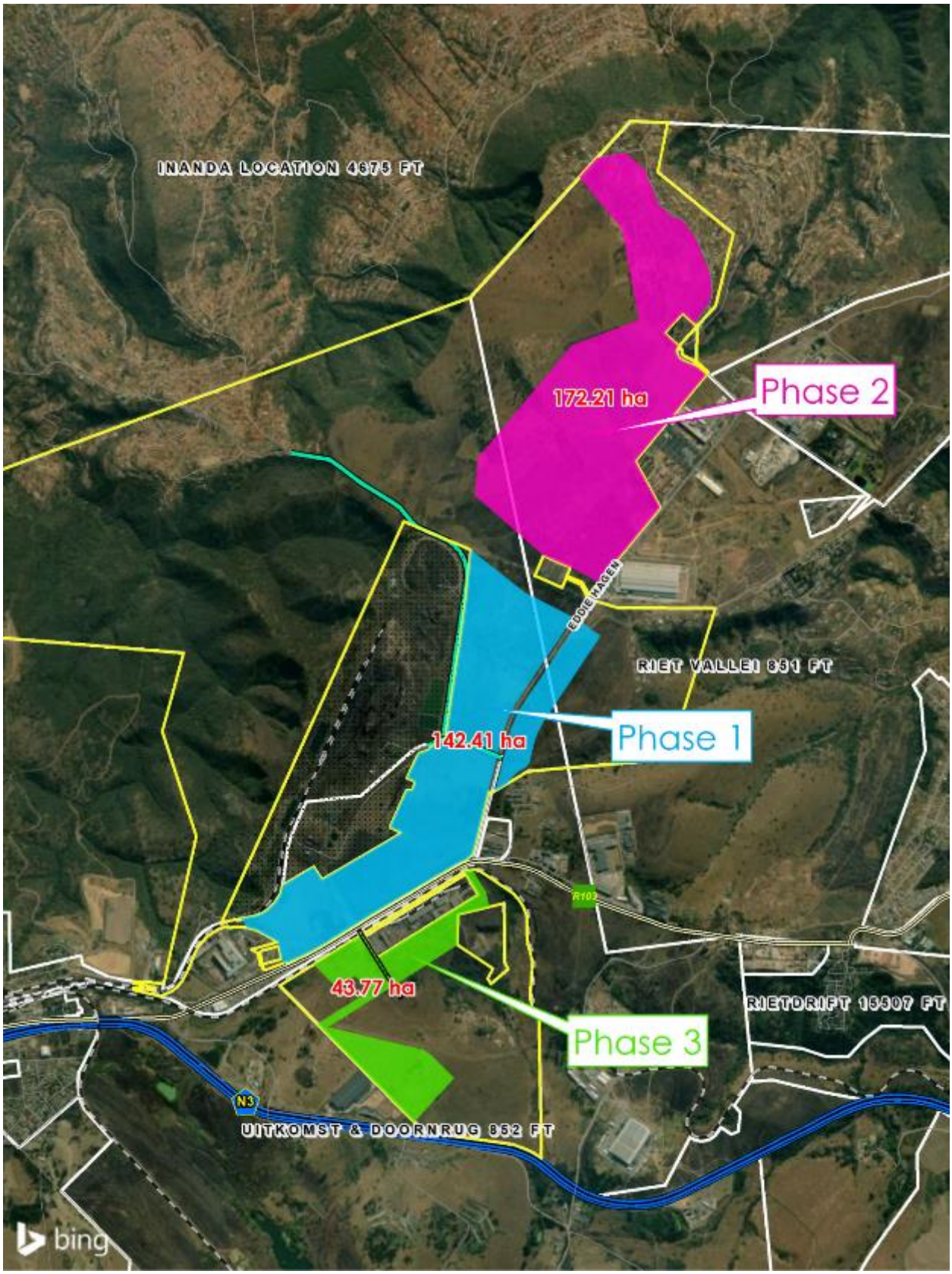

Figure 2: View of three parcels of land to be released for development

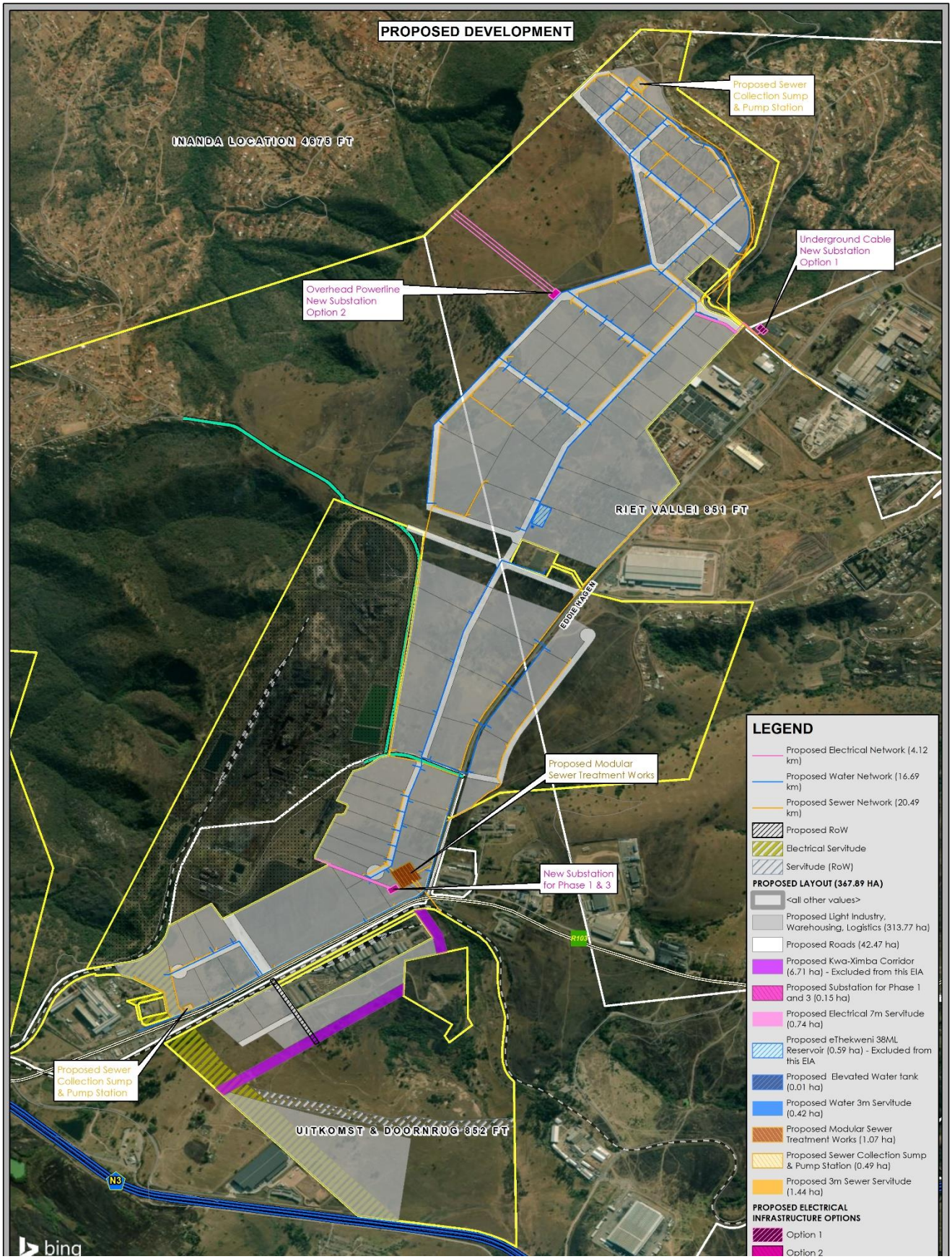

Figure 3: Final consolidated layout plan

4. ASSESSMENT OF IMPACTS ON HERITAGE RESOURCES

The impact assessment process ensures that all relevant factors are addressed that contribute to significance. For each predicted impact, criteria are applied to establish the significance of the impact based on likelihood and consequence, both without mitigation being applied (pre-mitigation) and with the implementation of the recommended mitigation measure(s) (post-mitigation). “Significant impact” means an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence (Zutari 2021:4).

The criteria that contribute to the **consequence** of the impact are:

- **Intensity** (the degree to which pre-development conditions are changed), which also includes the **type** of impact (being either a positive or negative impact); the **duration** (length of time that the impact will continue); and the **extent** (spatial scale) of the impact.
- The sensitivity of the receiving environment and/or sensitive receptors are incorporated into the consideration of consequence by appropriately adjusting the thresholds or scales of the intensity, duration and extent criteria based on expert knowledge.

The consequence is established using the formula: **consequence = type x (intensity + duration + extent)**. Depending on the numerical result, the impact's consequence would be extremely, highly, moderately or slightly detrimental; or neutral; or slightly, moderately, highly or extremely beneficial.

To determine the significance of an impact, the **probability** (or likelihood) of that impact occurring is also considered hence **significance = consequence x probability.**

Table 1: Definition of intensity ratings

Rating	Criteria	
	Negative impacts (Type of impact = -1)	**Positive impacts (Type of impact = +1)**
7	Complete destruction (irreversible and irreplaceable loss) of natural or social systems, resources (e.g. species) and human health. No chance of these processes or resources ever being restored to their pre-impact condition.	Noticeable, sustainable benefits that improve the quality and extent of natural or social systems or resources, including formal protection.
6	Very high degree of damage to natural or social systems or resources. These processes or resources may restore to their pre-project condition over very long periods of time (more than a typical human lifetime).	Great improvement to ecosystem or social processes and services or resources.
5	Serious damage to components of natural or social systems or resources and the contravention of legislated standards.	Ongoing and widespread benefits to natural or social systems or resources.
4	High degree damage to natural or social system components, species or resources.	Average to intense positive benefits for natural or social systems or resources.
3	Moderate damage to natural or social system components, species or resources.	Average, ongoing positive benefits for natural or social systems or resources.
2	Minor damage to natural or social system components, species or resources. Likely to recover over time. Ecosystems and valuable social processes are not affected.	Low positive impacts on natural or social systems or resources.
1	Negligible damage to individual components of natural or social systems or resources, such that it is hardly noticeable.	Limited low-level benefits to natural or social systems or resources.

Table 2: Definition of duration ratings

Rating	Criteria
7	**Permanent:** The impact will remain indefinitely.
6	**Beyond project life**: The impact will remain for some time after the life of the project.
5	**Project life:** The impact will cease after the operational life span of the project
4	**Long-term**: The impact will continue for 6-15 years.
3	**Medium-term:** The impact will continue for 2-5 years.
2	**Short-term:** The impact will continue for between 1 month and 2 years.
1	**Immediate**: The impact will continue for less than 1 month.

Table 3: Definition of extent ratings

Rating	Criteria
7	**International:** The effect will occur across international borders.
6	**National:** The impact will affect the entire country.
5	**Province/ Region:** The impact will affect the entire province or region
4	**Municipal Area:** The impact will affect the whole municipal area.
3	**Local:** The impact will extend across the study area and the LAP area.
2	**Limited:** The impact will be limited to the study area.
1	**Very limited:** The impact will be limited to the footprint of the development and will not extend to the boundaries of the study area.

Table 4: Definition of probability rating

Rating	Criteria
7	**Certain/ Definite:** There are sound scientific reasons to expect that the impact will definitely occur.
6	**Almost certain/Highly probable:** It is most likely that the impact will occur.
5	**Likely:** This impact has occurred numerous times here or elsewhere in a similar environment and with a similar type of development and could very conceivably occur.
4	**Probable:** This impact has occurred here or elsewhere in a similar environment and with a similar type of development and could conceivably occur.
3	**Unlikely:** This impact has not happened yet but could happen.
2	**Rare/ improbable:** The impact is conceivable, but only in extreme circumstances. The possibility of the impact manifesting is very low due to the design, experience or implementation of adequate mitigation measures.
1	**Highly unlikely/None:** The impact is expected never to happen or has a very low chance of occurring.

Table 5: Application of consequence rating

Range		Significance rating
-21	-18	Extremely detrimental
-17	-14	Highly detrimental
-13	-10	Moderately detrimental
-9	-6	Slightly detrimental
-5	5	Negligible
6	9	Slightly beneficial
10	13	Moderately beneficial
14	17	Highly beneficial
18	21	Extremely beneficial

Table 6: Application of significance rating

Range		Significance rating
-147	-109	Major - negative
-108	-73	Moderate - negative
-72	-36	Minor - negative
-35	-1	Negligible - negative
0	0	Neutral
1	35	Negligible - positive
36	72	Minor - positive
73	108	Moderate - positive
109	147	Major - positive

Table 7: Definition of confidence ratings

Rating	Criteria
Low	Judgement is based on intuition, and some major assumptions are used to assess the impact
Medium	Determination is based on common sense and general knowledge. The assumptions made, whilst having a degree of uncertainty, are fairly robust.
High	Substantive supportive data or evidence exists to verify the assessment.

Table 8: Impact on protected structures: pre-construction phase: PHASE 1

PRE-CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Farmstead complex 1*	2	2	1	3	8	N	24	Written application to the KZN Amafa & Research Institute for permission to damage or alter any part of farmstead complex with complete photographic record of remains Application approved & permit issued by the Institute	1	2	1	2	6	N	12
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Farmstead complex 2*	2	2	1	3	8	N	24	Written application to the Institute for permission to damage or alter any part of farmstead complex with complete photographic record of remains Application approved & permit issued by the Institute	1	2	2	2	6	N	12
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Remains of structures 1*	1	2	1	3	7	N	21	Unclear if structures are protected. If protected, written application to the Institute for permission to damage or destroy the remains with complete photographic record of remains Application approved & permit issued by the Institute	1	2	1	2	6	N	12

PRE-CONSTRUCTION PHASE																	
ACTIVITY **Description of proposed land use/ activity/ aspect**	**POTENTIAL ENVIRONMENTAL IMPACT** **Summary description of impact**	**APPLICABLE AREA** **Development Areas**	**SIGNIFICANCE PRE-MITIGATION** **Results of application of impact assessment methodology**							**SUMMARY OF MITIGATION MEASURES** **Outline of recommended mitigation measures**	**SIGNIFICANCE POST-MITIGATION** **Results of application of impact assessment methodology**						
			Intensity	**Duration**	**Extent**	**Probability**	**Total**	**Status (pos / neg)**	**Significance**		**Intensity**	**Duration**	**Extent**	**Probability**	**Total**	**Status (pos/ neg)**	**Significance**
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Remains of structures 2*	1	2	1	3	7	N	21	Unclear if structures are protected. If protected, written application to the Institute for permission to damage or destroy the remains with complete photographic record of remains Application approved & permit issued by the Institute	1	2	1	2	6	N	12
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Remains of structures 3*	1	2	1	3	7	N	21	Unclear if structures are protected. If protected, written application to the Institute for permission to damage or alter any part of farmstead complex with complete photographic record of remains Application approved & permit issued by the Institute	1	2	1	2	6	N	12

Table 9: Impact on protected structures – construction & post-construction phase: PHASE 1

CONSTRUCTION & POST CONSTRUCTION PHASE																		
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Farmstead complex 1*	2	3	1	6	12	N	72	Written application to the KZN Amafa & Research Institute for permit/s to destroy & remove remains of farmstead complex with complete photographic record of remains Application approved & permit issued by the Institute	1	3	1	6	11	Neg	66
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Farmstead complex 2*	2	3	1	6	12	N	72	Written application to the Institute for permit/s to destroy & remove remains of farmstead complex with complete photographic record of structures to be destroyed Application approved & permit issued by the Institute	1	3	1	6	11	N	66
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Remains of structures 1*	1	3	1	6	11	N	66	Unclear if structures are protected. If >60 years, then written application to be made to the Institute for permit/s to destroy & remove remains of structures with complete photographic record of remains	1	3	1	6	11	N	66

CONSTRUCTION & POST CONSTRUCTION PHASE																		
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
										Application approved & permit issued by the Institute							
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Remains of structures 2*	1	3	1	6	11	N	66	Written application to be made to the Institute for permit/s to destroy & remove remains of structures with complete photographic record of structures to be destroyed Application approved & permit issued by the Institute	1	3	1	6	11	N	66
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Remains of structures 3*	1	3	1	6	11	N	66	Age of structures to be determined; if >60 years, then written application to be made to the Institute for permit/s to destroy & remove remains of structures with complete photographic record of structures and remains of structures Application approved & permit issued by the Institute	1	3	1	6	11	N	66

Table 10: Impact on protected structures: pre-construction phase: PHASE 2

PRE-CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Intact structures farmstead 2*	-4	2	3	4	-13	Neg	52	Although structures are in poor condition, they are inhabited hence it recommended that the structures are not impacted. A 50m buffer to be placed around site If the structures are damaged in any way during this phase, then work must stop immediately and a heritage specialist must inspect the damage and the Institute must be informed. The specialist and the Institute will provide a way forward.	-3	2	3	4	-12	Neg	48
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Remains of structures associated with farmstead 2*	-2	2	2	3	-9	Neg	27	Developer is made aware of the remains. If there is damage during this phase, then work must stop immediately and a heritage specialist must inspect the damage and the Institute must be informed. The specialist and the Institute will provide a way forward	-1	2	2	3	-8	Neg	24

PRE-CONSTRUCTION PHASE																	
ACTIVITY **Description of proposed land use/ activity/ aspect**	**POTENTIAL ENVIRONMENTAL IMPACT** **Summary description of impact**	**APPLICABLE AREA** **Development Areas**	**SIGNIFICANCE PRE-MITIGATION** **Results of application of impact assessment methodology**							**SUMMARY OF MITIGATION MEASURES** **Outline of recommended mitigation measures**	**SIGNIFICANCE POST-MITIGATION** **Results of application of impact assessment methodology**						
			Intensity	**Duration**	**Extent**	**Probability**	**Total**	**Status (pos / neg)**	**Significance**		**Intensity**	**Duration**	**Extent**	**Probability**	**Total**	**Status (pos/ neg)**	**Significance**
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Cattle dip*	-3	2	2	3	-10	Neg	30	Developer is made aware of the site of the cattle dip. If there is damage during this phase, then work must stop immediately and a heritage specialist must inspect the damage and the Institute must be informed. The specialist and the Institute will provide a way forward	-2	2	2	3	-9	Neg	27
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Remains of stone structures*	2	2	2	3	9	N	27	Developer is made aware of the remains. If there is damage during this phase, then work must stop immediately and a heritage specialist must inspect the damage and the Institute must be informed. The specialist and the Institute will provide a way forward	1	2	2	3	8	N	24
Setting up of site camps, material stores, etc.	*Damage to protected structures*	*Remains of low stone walling*	2	2	2	3	9	N	27	Developer is made aware of the remains. If there is damage during this phase, then work must stop immediately and a heritage specialist must inspect the damage and the Institute must be informed. The specialist and the Institute will provide a way forward	1	2	2	3	8	N	24

Table 11: Impact on protected structures – construction & post-construction phase: PHASE 2

CONSTRUCTION & POST-CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Intact structures farmstead 2*	-5	4	3	4	-16	Neg	64	Although structures are in poor condition, they are inhabited hence it is recommended that the structures are not destroyed. 50m buffer to be placed around site If it is decided to demolish intact structures, 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. This section outlines the application process for the demolition, alteration or addition to a structure which is, or which may reasonably be expected to be older than 60 years Application approved & permit issued by the Institute	-4	4	3	4	-15	Neg	60

CONSTRUCTION & POST-CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Remains of structures associated with farmstead 2*	-2	4	2	5	-13	Neg	65	Written application to be made to the Institute for permit/s to destroy & remove remains of structures with complete photographic record of structures and remains of structures Application approved & permit issued by the Institute	-1	4	2	5	-12	Neg	60
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Cattle dip*	-2	3	2	5	-12	Neg	60	Written application to be made to the Institute for permit/s to destroy cattle dip with complete photographic record of cattle dip Application approved & permit issued by the Institute	-2	3	2	5	12	N	60
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Remains of stone structures*	2	3	2	4	11	N	44	Written application to be made to the Institute for permit/s to destroy remains dip with complete photographic record of the site Application approved & permit issued by the Institute	1	3	2	4	10	N	40

CONSTRUCTION & POST-CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Construction of proposed development, access roads, etc.	*Destruction of protected structures*	*Remains of low stone walling*	2	3	2	4	11	N	44	Written application to be made to the Institute for permit/s to destroy stone walling with complete photographic record of walling Application approved & permit issued by the Institute	1	3	2	4	10	N	40

Table 12: Assessment of impacts on protected structures – operational phase – PHASE 2

OPERATIONAL PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Daily operation of established activity / land us; deliveries, etc.	*Damage / alteration to protected structures*	*Intact structures farmstead 2*	-3	5	3	4	-15	Neg	60	As long as the 50m buffer is enforced, then the possibility of damage to the structures should be low. If there is damage to the structures, then work in the vicinity of the damage must stop, a heritage specialist called to site and the Institute informed. The Institute and specialist will provide the way forward in terms of repairs or whatever action is required. There must be access to the structures at all times to allow the residents to come and go as needed	-3	5	3	3	14	Neg	42

Table 13: Assessment of impacts on protected structures – Decommissioning phase – PHASE 2

DECOMMISSIONING PHASE																
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Decommissioning of activity with possible demolition of buildings, roads, etc	*Damage / alteration to protected structures*	*Intact structures farmstead 2*	-2	3	3	3	-11	Neg	33	As long as the 50m buffer is enforced, then the possibility of damage to the structures should be low. If there is damage to the structures, then work in the vicinity of the damage must stop, a heritage specialist called to site and the Institute informed. The Institute and specialist will provide the way forward in terms of repairs or whatever action is required. Access road/s to structures must be left intact to allow the residents to come and go as needed	-2	3	3	2	-10	Neg	20

Table 14: Assessment of impacts on graves – pre-construction phase – PHASE 2

PRE-CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Setting up of site camps, material stores, etc.	*Alteration, damage, or destruction of graves*	*Graves associated with farmstead 2*	-5	2	3	4	-14	Neg	56	A 50m buffer is placed around the intact farmhouses to include the graves in which no activities may take place; If graves are damaged, all activities near the damaged grave/s must stop; The Institute must be informed and a heritage specialist called to site to provide the way forward; Permits for the repair or demolition of damaged graves must be obtained prior to any further work being undertaken	-4	2	3	3	-12	Neg	36
Setting up of site camps, material stores, etc.	*Alteration, damage or destruction of grave*	*Grave located south-west of cattle dip*	-4	2	3	4	-13	Neg	52	20m buffer must be placed around the grave in which no activity may take place; The buffer must be visible and made of solid & durable material; If the grave is damaged, all activities near the grave must stop immediately; The Institute must be informed and a heritage specialist called to site to provide the way forward; Permit for the repair or demolition of damaged graves must be obtained prior to any further work being undertaken	-3	2	3	3	-11	Neg	33

Table 15: Assessment of impacts: graves – construction & post-construction phase – PHASE 2

CONSTRUCTION & POST-CONSTRUCTION PHASE																		
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Construction of proposed development, access roads, etc.	*Destruction / removal of graves*	*Graves associated with farmstead 2*	-7	5	3	4	-19	Neg	76	Graves to be left *in situ*; 50m buffer to be placed around the structures including the associated graves; The buffer must be clearly visible to construction crews and must be made from sturdy and durable material Access to the grave for family members must be allowed If it is decided to remove the graves, then the procedure provided in section 5 of the Draft KwaZulu-Natal & Research Institute Regulations, 2021 must be followed. This procedure refers to the application process to be followed for the damage, alteration, exhumation or removal of grave or burial ground older than 60 years or deemed to be of heritage significance by the Institute. .	-4	5	3	4	-16	Neg	64

CONSTRUCTION & POST-CONSTRUCTION PHASE																		
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Construction of proposed development, access roads, etc.	*Destruction / removal of graves*	*Grave located south-west of cattle dip*	-7	5	3	4	-19	Neg	-76	20m buffer must be placed around the grave in which no activity may take place; The buffer must be visible and made of solid & durable material. Access to the grave for family members must be allowed If it is decided to remove the grave, then the procedure provided in section 5 of the Draft KwaZulu-Natal & Research Institute Regulations, 2021 must be followed. This procedure refers to the application process to be followed for the damage, alteration, exhumation or removal of grave or burial ground older than 60 years or deemed to be of heritage significance by the Institute	-4	5	2	4	-15	Neg	60

Table 16: Assessment of impacts: graves – operational phase – PHASE 2

OPERATIONAL PHASE																
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Daily operation of established activity / land use; deliveries, etc.	*Damage or alteration graves*	*Graves associated with farmstead 2*	-5	5	3	4	-17	Neg	-68	Buffer of 50m must be kept in place around the site throughout operational phase; Buffer must be of visible and sturdy; Access to the graves by family members must be allowed No operational activities may take place within buffer; If the graves are damaged, all operations must cease near the graves and the Institute must be informed and a heritage specialist called to site to provide the way forward; Necessary permits for the repair of the damaged graves must be obtained prior to any work continuing close to the graves	-4	5	3	3	-15	Neg	45
Daily operation of established activity / land use; deliveries, etc.	*Damage or alteration graves*	*Grave located south-west of cattle dip*	-4	5	2	4	-15	Neg	-60	Buffer of 20m must be kept in place around the grave throughout operational phase; Buffer must be of visible and sturdy; Access to the grave by family	-3	5	2	3	-13	Neg	39

OPERATIONAL PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
										members must be allowed; No operational activities may take place within buffer; If the grave is damaged, all operations must cease near the grave and the Institute must be informed and a heritage specialist called to site to provide the way forward; Necessary permit for the repair of the damaged grave must be obtained prior to any work continuing near the grave							

Table 17: Assessment of impacts: graves – decommissioning phase – PHASE 2

DECOMMISSIONING PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Decommissioning of activity with possible demolition of buildings, roads, etc	*Damage or destruction of graves*	*Graves associated with farmstead 2*	5	3	3	4	-15	Neg	-60	Buffer of 50m must be kept in place around the site throughout the decommissioning phase; Buffer must be of visible and sturdy; No decommissioning activities may take place within buffer; If the graves are damaged, all operations must cease near the graves and the Institute must be informed and a heritage specialist called to site to provide the way forward; Necessary permits for the repair of the graves must be obtained prior to any work continuing	-3	3	3	3	-12	Neg	36
Decommissioning of activity with possible demolition of buildings, roads, etc	*Damage or destruction of graves*	*Grave located south-west of cattle dip*	-4	3	2	4	-13	Neg	-52	Buffer of 20m must be kept in place around the grave throughout decommissioning phase; Buffer must be of visible and sturdy; No decommissioning activities may take place within buffer; If the graves are damaged, all activities must cease near the grave and the Institute must be informed and a heritage	-3	3	2	3	-11	Neg	33

DECOMMISSIONING PHASE																	
ACTIVITY **Description of proposed land use/ activity/ aspect**	**POTENTIAL ENVIRONMENTAL IMPACT** **Summary description of impact**	**APPLICABLE AREA** **Development Areas**	**SIGNIFICANCE PRE-MITIGATION** **Results of application of impact assessment methodology**							**SUMMARY OF MITIGATION MEASURES** **Outline of recommended mitigation measures**	**SIGNIFICANCE POST-MITIGATION** **Results of application of impact assessment methodology**						
			Intensity	**Duration**	**Extent**	**Probability**	**Total**	**Status (pos / neg)**	**Significance**		**Intensity**	**Duration**	**Extent**	**Probability**	**Total**	**Status (pos/ neg)**	**Significance**
										specialist called to site to provide the way forward; Necessary permits for the repair of the damaged grave must be obtained prior to any work continuing							

Table 18: Assessment of impacts: possible protected structures – pre-construction phase – PHASE 3

PRE-CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Setting up of site camps, material stores, etc	*Damage to remains of structures that could be >60 years hence protected*	*Remains of farmstead*	2	2	2	4	10	N	40	Age of the remains need to be confirmed. If older than 60 years then if any impact on remains, then Institute must be alerted and a heritage specialist called to site to provide way forward which may include application for demolition and removal of remains. If remains <60 years then they can be removed without permission from the Institute	1	2	2	3	8	N	24
Setting up of site camps, material stores, etc	*Damage to intact structure that could be >60 years hence protected*	*Grain silo*	-3	2	2	4	-11	Neg	44	Age of silo needs to be confirmed. If older than 60 years then if any impact on the silo during this phase, then work should stop in immediate vicinity of silo, the Institute alerted and a heritage specialist called to site to provide way forward which may include application for demolition and removal of the silo. If the silo is <60 years then the silo can be removed without permission from the Institute	-2	2	2	3	-9	Neg	27

Table 19: Assessment of impacts: possible protected structures: construction phase: PHASE 3

CONSTRUCTION PHASE																	
ACTIVITY Description of proposed land use/ activity/ aspect	**POTENTIAL ENVIRONMENTAL IMPACT** Summary description of impact	**APPLICABLE AREA** Development Areas	**SIGNIFICANCE PRE-MITIGATION** Results of application of impact assessment methodology							**SUMMARY OF MITIGATION MEASURES** Outline of recommended mitigation measures	**SIGNIFICANCE POST-MITIGATION** Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance		Intensity	Duration	Extent	Probability	Total	Status (pos/ neg)	Significance
Construction of proposed development, access roads, etc.	*Destruction / removal of remains of possibly protected structure/s*	*Remains of farmstead*	2	3	2	5	12	N	60	Age of remains must be determined. If >60 years, then written application to be made to the Institute for permit/s to destroy & remove remains of structures with complete photographic record of structures and remains of structures Application approved & permit issued by the Institute	1	3	2	5	11	N	55
Construction of proposed development, access roads, tec	*Damage to intact structure that could be >60 years hence protected*	*Grain silo*	-2	3	2	6	-13	Neg	78	Age of silo needs to be confirmed. If older than 60 years then written application to be made to the Institute for permit for the destruction of the silo & removal of the remains with a complete photographic record of the silo Application approved & permit issued by the Institute	-1	3	2	6	-12	N	72

4.1 ASSESSMENT OF CUMULATIVE IMPACTS

A "cumulative impact" is defined in the EIA regulations, 2014 as 'past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities'.

The assessment of the cumulative impacts will consider the cumulative impact of proposed land uses and developments in the broader Cato Ridge Local Area Plan (LAP) area (**Fig. 4**) as well as the proposed bulk services infrastructure to support the proposed development, including municipal bulk services infrastructure.

Valued Ecosystem Components (VECs) are considered key to understanding cumulative impacts because the sources of these impacts are diffuse and distributed over long periods of time. VECs may be:

- Physical features, habitats, wildlife populations, e.g. biodiversity).
- Ecosystem services.
- Natural processes, e.g. Water and nutrient cycles, microclimate.
- Social conditions, e.g. Health, economics.
- Cultural aspects, e.g. Traditional spiritual ceremonies.

While VECs may be directly or indirectly affected by a specific development, they often are also affected by the cumulative effects of several developments. VECs are the ultimate recipient of impacts because they tend to be at the ends of ecological pathways. The acronym VECs refers to sensitive or valued receptors of impact whose desired future condition determines the assessment endpoints used in the cumulative impact assessment (CIA) process.

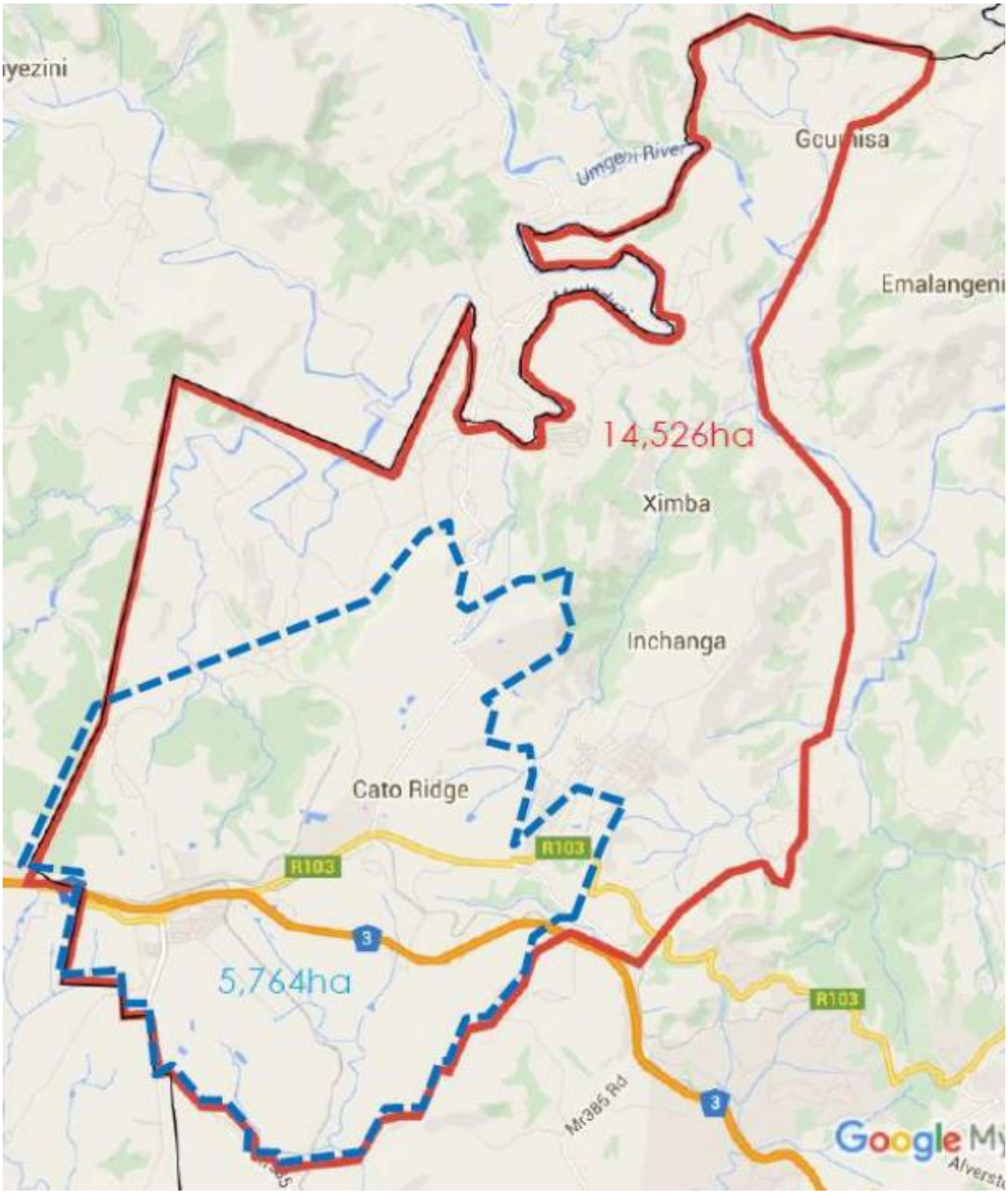

Figure 4: **Study area boundary for the Cato Ridge Local Area Plan outlined in red**

The phases that could lead to cumulative impacts are the construction phase and the operational phase where activities such as the building and operating of warehousing and the use of access roads and the installation of sewerage infrastructure could impact heritage resources

Construction Phase: construction of buildings and associated infrastructure including access roads, municipal infrastructure, etc.

Operational Phase: use of buildings for warehousing or other activities; delivery and storage of goods, expansion of land use, etc.

Table 20: Construction phase: assessment of cumulative impacts

Potential environmental impact						
Damage to heritage resources						
Applicable area						
Project area – Phases 1, 2 and 3						
Valued ecosystem components						
Protected structures			**Graves**		**Archaeological sites**	
Direct and indirect impacts			Direct impacts		Indirect impacts	
Significance: pre-mitigation						
Intensity	**Duration**	**Extent**	**Status (neg/pos)**	**Consequence**	**Probability**	**Impact significance**
Permanent	Beyond project life	Municipal	Negative	Highly detrimental	Likely	Moderate - negative
7	6	4		-17	5	-85
Potential impacts						
Protected structures: During construction, the developer may want to use all the space available to develop on and therefore may decide to demolish protected structures (once approval has been received from the Institute) even though people inhabit the intact structures. This is a direct impact that will lead to the permanent dislocation of those inhabitants who will need to find alternative accommodation thereby exacerbating the housing demand in the Municipality. Previous studies indicated intact farmhouses and outbuildings older than 60 years (hence protected) west of Phase 1 that talks to the farming history of Cato Ridge which is rapidly disappearing with the commercialization of the area. The remains of protected structures found on the project site in all three areas as well as two cattle dips is a testament to this history and to a landscape that is rapidly changing due to cumulative impacts of the commercialization of the Cato Ridge area. The cumulative impact is clear as the area develops and farming activities become less and less visible. Protected intact structures may be inadvertently (indirectly) damaged during the construction of warehousing. Graves: During construction, the developer may want to use all the space available to develop on and therefore may decide to exhume the identified graves (once approval has been received from the Institute) although this is not recommended as the removal of graves is a highly sensitive matter. The removal of the graves will be a direct impact and have a negative impact on family members who currently have easy access to the graves. Studies undertaken in the Cato Ridge area indicates that there are a number of graves in the greater surrounding area that are located close to settlements and homes that supports the						

tradition or practice of burying family members near homes. The cumulative impact is assessed as moderately negative and may continue as the Cato Ridge area is commercially developed which is an industry not geared to having graves in close proximity to it.

Archaeological sites:
There are archaeological sites close to the project area (near Phase 2 land parcel). The proposed overhead power supply infrastructure and substation (Option 2) could impact these sites as indicated in **Fig. 3**. At least one of the archaeological sites has graves associated with it. These sites are highly sensitive to development and once impacted, their restoration is difficult and costly. In addition, they cannot be relocated. The presence of the sites on edge of the plateau landscape was of significance to these early inhabitants possibly in terms of security and access to food and water. Previous studies indicate archaeological finds north of the project area in the Mngeni River valley as well as several in the larger Cato Ridge area. The assessment indicated that the cumulative impact is moderately negative and it is recommended that no development take place west of the area known as Phase 2 and the edge of the plateau to protect this historical and natural landscape.

Mitigation measures

Protected structures:

- Leave inhabited structures as is and allow residents to remain in the dwellings
- If structures are to be demolished, then give the inhabitants at least 6 months to find alternative accommodation
- The developer to communicate with the inhabitants on a regular basis.
- Photographic record of structures to be demolished must be provided to the Institute when application is made for the demolition of the structures
- If structures are going to be left intact, provide the recommended buffer around them.
- If the structures are damaged because of construction activities around them, then work within 10m of the damaged structure/s must stop and the Institute informed and a heritage specialist called to site to inspect the damage and provide a way forward.

Graves:

- It is recommended that graves are left *in situ* and that they are fenced with the recommended buffer distance to ensure that the graves are not impacted by construction activities.
- If graves are to be removed, then the process provided in section 5 of the Draft KwaZulu-Natal & Research Institute Regulations, 2021 must be followed including a detailed public participation process.

Archaeological sites:

- Option 1 is selected for the proposed new power supply and substation. This option is situated away from the project area with no archaeological sites in close vicinity
- If Option 2 is selected, then the archaeological sites west of Phase 2 must be demarcated with a 30m buffer in which no activities may take place. The buffer must be highly visible and made from sturdy and durable material or fencing.
- If archaeological sites are damaged during the construction of Option 2, then work within 10 m of the damaged site or sites must stop and the Institute informed and a heritage specialist called to site to inspect the damage and provide the way forward. No work may proceed within 10 m of the site/s until the heritage specialist gives the go-ahead.

Significance – post-mitigation						
Intensity	**Duration**	**Extent**	**Status (neg/pos)**	**Consequence**	**Probability**	**Impact significance**
Serious damage	Long-term	Local	Negative	Moderately detrimental	Probable	Minor - negative
5	4	3		-12	4	-48

Table 21: Assessment of cumulative impacts: operational phase

Potential environmental impact						
Damage to heritage resources						
Applicable area						
Project area – Phases 1, 2 and 3						
Valued ecosystem components						
Protected structures			**Graves**		**Archaeological sites**	
Indirect impacts			Direct impacts		Indirect impacts	
Significance: pre-mitigation						
Intensity	**Duration**	**Extent**	**Status (neg/pos)**	**Consequence**	**Probability**	**Impact significance**
Serious damage	Project life	Municipal	Negative	Highly detrimental	Likely	Minor - negative
5	5	4		-14	5	-70
Potential impacts						
Protected structures: Intact protected structures left *in situ* may damaged during the operational phase by large vehicles inadvertently backing into the structures especially if the recommended buffer is not in place. The growth of the activity during the operational phase may result in expansion activities impacting the intact protected structures in terms of the alteration or damage to the structures. The increase in warehousing and other developments will and presumably already has impacted those living close to such developments with a cumulative						

increase in noise through vehicular traffic at all times of the day and night, wear and tear on access roads, dangerous driving conditions, etc. This may result that those living in the intact protected structures will eventually leave and which can be seen in the many remains of residences and associated buildings in and around the project area which have been abandoned. This cumulative impact is characteristic of areas that are rapidly transforming.

Graves:
During the operational phase, *in-situ* graves may be damaged or destroyed by operational activities such as large vehicles driving over them especially if the recommended buffer is not in place. This will negatively impact families and inhabitants associated with the graves and contribute to a sense of dislocation as the surrounding area is cumulatively transformed by commercial development.

Archaeological sites:
If the electricity supply known as Option 2 (overhead power lines and substation) is selected and installed, then maintenance of and repairs to the power lines could lead to the damage or alteration of the archaeological sites through vehicles driving into them or maintenance workers walking over them and dislodging sections of walls, etc.

Mitigation measures

Protected structures:

- 50m buffer around the intact protected structures be in place throughout the operational phase. Buffer material to be sturdy and highly visible
- If the structures are damaged in any way during this phase, then the Institute needs to be informed and a heritage specialist appointed to assess the damage. Application will need to be made to the Institute for permission to repair the structures. Repairs must be undertaken by a specialist and at the cost of the owner

Graves:

- It is recommended that grave sites are left *in situ* and that they are fenced with the recommended buffer distance to ensure that the graves are not impacted by operational activities.
- If graves are damaged, then work within 10 m of the graves must stop, the Institute informed and a heritage specialist called to site. Application will need to be made to the Institute for permits to repair the graves. The repair of the graves must be undertaken by a specialist in consultation with the family and at the cost of the business owner.

Archaeological sites:

- The archaeological sites must be demarcated with a 30m buffer around them in which no activities may take place. The buffer must be highly visible and made from sturdy and durable material or fencing.
- If archaeological sites are damaged during the construction of Option 2, then work within 10 m of the damaged site or sites must stop and the Institute informed and a heritage specialist called to site to inspect the damage and provide the way forward. Application will need to be made to the Institute for permission to repair the damage which must be undertaken by an archaeologist whose specializes in repairs of archaeological sites. The cost of repair work will be for the business owner.

Significance – post-mitigation						
Intensity	**Duration**	**Extent**	**Status (neg/pos)**	**Consequence**	**Probability**	**Impact significance**
Serious damage	Long-term	Local	Negative	Moderately detrimental	Unlikely	Minor - negative
5	4	3		-12	3	-36

5. DISCUSSION AND RECOMMENDATIONS

PHASE 1

Several heritage sites are present in this area. There are several sites with the remains of the farmstead complexes. Several of the remains of structures are older than 60 years hence protected by section 37 (1)(a) of the KwaZulu-Natal Amafa and Research Institute Act, 2018. The age of several other structures was more difficult to ascertain.

An application must be made to the Institute for the for the alteration or demolition of structures older than 60 years if this area is to be impacted. In terms of the structures where the age could not be clearly determined, it is recommended that either a built heritage specialist be consulted regarding the age of the remains of the structures or that an application is made to the Institute for permission to demolish and remove the structures on the presumption that the remains are older than 60 years. The application process for the demolition, alteration or addition to a structure which is, or which may reasonably be expected to be older than 60 years must follow the process as 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.

The assessment of significance of impacts on the structures and remains of structures indicated largely that the impact significance before and after mitigation would be a minor negative rating. The probability that most or all of the structures will be destroyed (once permission is received from the Institute) contributed to the high consequence ratings (between highly and extremely detrimental) which dropped to a moderate rating post-mitigation. It should be noted that the destruction and removal of the remains of protected structures was given a neutral status as in their current state the remains are of no cost or benefit to the receiving environment.

The mitigation measures provided in the tables above and in Chapter 6 below must be implemented where necessary and adhered to.

PHASE 2

Several heritage sites were found including graves and protected structures. Structures and the remains thereof that are older than 60 years are protected by section 37 (1)(a) of the

KwaZulu-Natal Amafa and Research Institute Act. An application must be made to the Institute for the alteration or demolition such structures according to the process as 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.

The is one farmstead complex (farmstead 2) which has intact structures. The assessment of impacts indicated that the consequence of impacts pre-mitigation would be extremely detrimental and post-mitigation would be highly detrimental because the structures are inhabited and there are graves associated with structures. The significance rating, post-mitigation, is a minor negative rating due to the mitigation measures recommended.

Graves are protected by section 39 (1) of the KwaZulu-Natal Amafa and Research Institute Act. It is strongly recommended that graves are not moved due to the high significance allocated to graves and the sensitivities around the relocation of graves. However, if it is decided to relocate any graves in Development Area 3, then the procedure described in section 5 of the draft KwaZulu-Natal & Research Institute Regulations, 2021 must be followed or the process in section 4 of the KwaZulu-Natal Heritage Regulations 2012 if the 2021 regulations have not been officially promulgated by the time an application is made. The grave sites and recommended buffers around them as described in this report have been excluded from the development footprint. Prior to construction and during construction, if there are any chance finds of graves, then work will need to stop in the area of the find and a heritage specialist called to site to ascertain the way forward.

The assessment of significance of impacts on the graves in this area indicated that, pre-mitigation, the consequence of impacts would be extremely detrimental which dropped to a rating of moderately detrimental post-mitigation which included the recommendation that the graves be left *in-situ*. The significance rating pre-mitigation was moderate negative; with mitigation measures, this rating fell to a minor negative rating.

The mitigation measures provided in the tables above and in Chapter 6 below must be implemented where necessary and adhered to.

PHASE 3

The area is disturbed by a large quarry, some sand mining activities and previous farming activity. The remains of the structures that comprised a farmstead complex that include an intact silo / water tower, were built between 1937 and 1968, hence they could be older than 60 years and therefore protected by section 37 (1)(a) of the KwaZulu-Natal Amafa and Research Institute Act, 2018. Such structures cannot be altered, demolished or added to without prior written approval of the Institute having been obtained on written application to the Institute.

It is therefore recommended that either a built heritage specialist be consulted regarding the age of the remains of the structures and the silo or that an application is made to the Institute for permission to demolish and remove the structures on the presumption that the remains of the structures are older than 60 years. The application process for the demolition, alteration or addition to a structure which is, or which may reasonably be expected to be older than 60 years must follow the process as 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.

An assessment of impacts on the structures and remains of structures indicated that the impact would be of minor negative significance. The mitigation measures provided in the tables above and in Chapter 6 below must be implemented where necessary and adhered to. The destruction and removal of the remains of protected structures as well as the silo was given a neutral status as in their current state the remains and the silo are of no cost or of no benefit to the receiving environment.

6. MITIGATION MEASURES

- For any chance heritage finds, all work must cease in the area affected (within at least 10m) and the Applicant / Contractor must be immediately informed.
- 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 human remains be found, 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.
- The following steps / protocol should be implemented in terms of chance fossil finds:
    - When construction activities begin, any rocks disturbed during this process must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, plants, insects, bone, and coal) should be put aside in a suitably protected place.
    - Photographs of possible fossil plants must be provided to the Developer to assist in recognizing the fossil plants. This information should be built into the Environmental Management Programme's (EMPr) training and awareness plan and procedures.
    - Photographs of putative fossils should be sent to a palaeontologist for preliminary assessment.
    - If there is any possible fossil material found by the environmental officer / developer, then a qualified palaeontologist must be sub-contracted in order for them to visit the site to inspect the selected material and check the dumps where feasible.
    - Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site, permit must be obtained from the Institute. Annual reports must be submitted to the Institute as required by the relevant permits.