

ProcedureProtocol

**Protocol: Morphological Analysis (isiZulu)Protocol: Morphological Analysis (isiZulu)**

**X.Y.Z1.0.4**

**Name of AuthorW. Pienaar**

DOCUMENT INFORMATION

|  |  |
| --- | --- |
| **Filename** | Protocol.SADiLaR.MorphologicalAnalysisIsiZulu.1.0.4.WP.2018-11-30.docx |
| **Type** | Protocol |
| **Title** | Protocol: Morphological Analysis (isiZulu) |
| **Version** | 1.0.4 |
| **Source Author(s)** | W. Pienaar |
| **Commentator(s)** | M.J. Puttkammer |
| **Status** | Document Status |
| **Date** | 2018-12-04 |
| **Pages** | 18 |
| **Security Classification** | Public Domain Only Source Author(s) Only Distributors Only NWU |

|  |  |
| --- | --- |
| **Distribution** |  |
| **Key Words** |  |
| **Project** | SADiLaR |

DOCUMENT HISTORY

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Status** | **Author/Commentator** |
| Version of document when opened | Date of document as specified by previous author | Status of document when opened | Name of previous author(s) or commentator(s) |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

TABLE OF CONTENTS

[Introduction 6](#_Toc531349121)

[Aim of this protocol 6](#_Toc531349122)

[Concept and definitions 6](#_Toc531349123)

[CATEGORY 1: Nouns 8](#_Toc531349124)

[CATEGORY 2: Verbs and auxiliary verbs 8](#_Toc531349125)

[CATEGORY 3: Adjectives 10](#_Toc531349126)

[CATEGORY 4: Adverbs ([Adv]) 11](#_Toc531349127)

[CATEGORY 5: Subject concords ([SC]) 11](#_Toc531349128)

[CATEGORY 6: Object concords ([OC]) 12](#_Toc531349129)

[CATEGORY 7: Demonstratives ([DEM]) 12](#_Toc531349130)

[CATEGORY 8: Quantitatives 13](#_Toc531349131)

[CATEGORY 9: Relatives 13](#_Toc531349132)

[CATEGORY 10: Pronouns 14](#_Toc531349133)

[CATEGORY 11: Copulatives 15](#_Toc531349134)

[CATEGORY 12: Particles and prepositions 15](#_Toc531349135)

[CATEGORY 13: Secondary morphemes 16](#_Toc531349136)

[CATEGORY 14: Ideophones ([Ideoph]) 16](#_Toc531349137)

[CATEGORY 15: Possessive concords 16](#_Toc531349138)

[CATEGORY 16: Interjections ([Interjec]) 16](#_Toc531349139)

[CATEGORY 17: Conjunctions ([Conj]) 16](#_Toc531349140)

[CATEGORY 18: Interrogatives 17](#_Toc531349141)

[CATEGORY 19: Abbreviations ([Abbr]) 17](#_Toc531349142)

[CATEGORY 20: Demonstrative Copulatives ([DemCop]) 17](#_Toc531349143)

[CATEGORY 21: Enumeratives 18](#_Toc531349144)

[CATEGORY 22: Tense markers 18](#_Toc531349145)

[CATEGORY 23: Foreign ([Foreign]) 18](#_Toc531349146)

[CATEGORY 24: Proper name ([ProperName]) 18](#_Toc531349147)

[General principles 19](#_Toc531349148)

[Changing the protocol 19](#_Toc531349149)

[Authoritative references 19](#_Toc531349150)

[Roles and contact details 20](#_Toc531349151)

# Introduction

## Aim of this protocol

The aim of this protocol is to guide annotators in the process of morphological analysis for the development of text resources for the SADiLaR project.

This document explicates some general principles to be followed in annotating the corpus, explains the process of annotation, and provides a detailed explanation of the tag set to be used.

This is a dynamic, “living” document, and should be adapted following the procedure as explicated in the section “Changing the protocol”.

## Concept and definitions

The aim of annotation on the morphological analysis layer is to identify the morphemes of each token (specifically morphologically complex words), as identified on the tokenisation layer (i.e. usually words, multi-word expressions, and punctuation). The following definitions apply:

* **Morphological analysis**: The identification and description of morphemes in complex words.
* **Morpheme**: A simplex symbolic (i.e. (grammatically) meaningful) unit in the language system. It is simplex in the sense that it does not contain smaller symbolic units as subparts; e.g. a morpheme, like the subject concord *zi-* of class 8/10.

Morphemes in isiZulu include nominal preprefixes and basic prefixes (e.g. Classes 1-15), verbal suffixes (e.g. -is-, -el-, -an-), subject and object concords, etc. Nominal prefixes in isiZulu are sub-divided into preprefixes and basic prefixes. This sub-division is important because in some instances the preprefix is deleted, e.g. *umfana lo* vs. *lo mfana*

* **Root**: The verbal stem without any affixes or extension (e.g. -*theng*-)
* **Stem**:
  + Nominal: nominal stem without affixes (e.g. -*ntu*)
  + Verbal: root with affixes and extension (e.g. *-thenga*, *-thengela*, *-thengisa*)

Main categories for morphological analysis:

|  |
| --- |
| CATEGORY 1: Nouns |
| CATEGORY 2: Verbs and auxiliary verbs |
| CATEGORY 3: Adjectives |
| CATEGORY 4: Adverbs |
| CATEGORY 5: Subject concords |
| CATEGORY 6: Object concords |
| CATEGORY 7: Demonstratives |
| CATEGORY 8: Quantitatives |
| CATEGORY 9: Relatives |
| CATEGORY 10: Pronouns |
| CATEGORY 11: Copulatives |
| CATEGORY 12: Particles and prepositions. Note that these terms are not customary in isiZulu grammars |
| CATEGORY 13: Secondary morphemes |
| CATEGORY 14: Ideophones |
| CATEGORY 15: Possessive concords |
| CATEGORY 16: Interjections |
| CATEGORY 17: Conjunctions |
| CATEGORY 18: Interrogatives |
| CATEGORY 19: Abbreviations |
| CATEGORY 20: Demonstrative Copulatives |
| CATEGORY 21: Enumeratives |
| CATEGORY 22: Tense markers |
| CATEGORY 23: Foreign |
| CATEGORY 24: Proper name |

# CATEGORY 1: Nouns

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Class nr.** | **Example from each class** | **Class prefix**  **([BPre] / [NPre] /**  **[NPrePre])** | **Stem**  **([NStem])** | **Suffix**  **Aug**  **([AugSuf])** | **Suffix**  **Dim**  **([DimSuf])** | **Suffix**  **Loc**  **([LocSuf])** |
| Class 1 | umuntu | um(u)- | -ntu | -kazi | -ana | -ini |
| Class 1a | ubaba | u- | -baba |  |  |  |
| Class 2 | abantu | ba- | -ntu |  |  |  |
| Class 2a | obaba | o- | -baba |  |  |  |
| Class 3 | umuthi | um(u)- | -thi |  |  |  |
| Class 4 | imithi | imi- | -thi |  |  |  |
| Class 5 | ikati | i(li)- | -kati |  |  |  |
| Class 6 | amakati | ama- | -kati |  |  |  |
| Class 7 | isinkwa | isi- | -nkwa |  |  |  |
| Class 8 | izinkwa | izi- | -nkwa |  |  |  |
| Class 9 | imvu  inja | i(n)- | -vu  -nja |  |  |  |
| Class 10 | izimvu  izinja | izi(n)- | -vu  -nja |  |  |  |
| Class 11 | uthi  uluthi | u(lu) | -thi |  |  |  |
| Class 14 | utshani  ubuntu | u(bu)- | -tshani  -ntu |  |  |  |
| Class 15 | ukuhamba | uku- | -hamba |  |  |  |
| Class 16 | phakathi | pha- |  |  |  |  |
| Class 17 | ukunene | ku- |  |  |  |  |
| Class 18 | muva | mu- |  |  |  |  |

# CATEGORY 2: Verbs and auxiliary verbs

|  |  |  |
| --- | --- | --- |
| Verbal root | [VRoot] | -hamb-, -bon- |
|  |  |  |
| Intransitive verbal root | [Intrans] | -ceb, -dal |
|  |  |  |
| Verb terminative (-a <present>, -e <perfect>, -i) | [VerbTerm] | -a, -e, -i |

Verbal Suffixes

The following tags are present in the data, use the specific tag in the table below:

|  |  |  |
| --- | --- | --- |
| Neuter | [NeutExt] | -akal- |
| Intensive | [IntensExt] | -isis- |
| Reciprocal | [RecipExt] | -an- |
| Applicative | [ApplExt] | -el- |
| Causative | [CausExt] | -is- |
| Passive | [PassExt] | -iw- / -w- |

The following tags exist in isiZulu, use the specific tag in the table below if possible, otherwise use [VerbExt].

|  |  |  |
| --- | --- | --- |
| Perfective {{Doke, 1973:152}} | [Perf] | -elel- |
| Persistive {{Doke, 1973:153}} | [Pers] | -ezel- {{\*}} |
| Neutro active | [NAct] | -al- {{\*}} |
| Dispersive | [Dis] | -alal- {{\*}} |
| Positional | [Pos] | -am- {{\*}} |
| Alternative causative | [ACau] | -y- |
| Contactive | [Con] | -ath-{{\*}} |
| Neutro passive | [NPas] | -ek- |
| Perfect | [Per] | -il- |
| Reversive intransitive | [RIntrans] | -uk- / -uluk- {{\*}} |
| Reversive transitive | [RTrans] | -ul- / -ulul- {{\*}} |

\* “… a number of roots in Zulu contain what appear to be verbal extensions, but no corresponding base roots occur to confirm their identity as such. It thus appears that such extensions have become fossilized elements of the roots” (Poulos and Msimang, 1998:203)

Verbal Prefixes:

|  |  |  |
| --- | --- | --- |
| Reflexive prefix | [ReflPre] | -zi- |
| Imperative prefix | [ImpPre] | -yi- |
| Locative prefix | [LocPre] | -ku- |
| Progressive prefix | [ProgPre] | -sa- |
| Pre-locative “s” | [PreLoc-s] | -s- |

Auxiliary verbs ([AuxVStem])

|  |
| --- |
| Verb stem (e.g. asemqoka) |
| -be |
| -se |
| -qale |
| -fanele |
| -sale |

Copulative verbs ([Cop])

|  |
| --- |
| Verb stem (e.g. le, ba) |
| -ba |
| -be (perfect form of ba-) |

# CATEGORY 3: Adjectives

Adjective stem ([AdjStem])

|  |
| --- |
| -bi |
| -bili |
| -dala |
| -de |
| -fishane |
| -fuphi |
| -fushane |
| -hlanu |
| -hle |
| -khulu |
| -mbi |
| -ncinyane |
| -ne |
| -ngaki |
| -ningi |
| -nye |
| -sha |
| -thathu |

Adjective prefix ([AdjPref])

|  |  |
| --- | --- |
| **Persons & classes** | **Adjective prefix** |
| 1st p.s. | engimu-/engim- |
| 1st p.p. | esiba- |
| 2nd p.s. | omu- |
| 2nd p.p. | eniba- |
| Class 1 | omu-/om- |
| Class 1a | omu-/om- |
| Class 2 | aba- |
| Class 2a | aba- |
| Class 3 | omu-/om- |
| Class 4 | emi- |
| Class 5 | eli- |
| Class 6 | ama- |
| Class 7 | esi- |
| Class 8 | ezin- |
| Class 9 | en- |
| Class 10 | ezin- |
| Class 11 | olu- |
| Class 14 | obu- |
| Class 15 | oku- |

# CATEGORY 4: Adverbs ([Adv])

Basic adverbs

|  |
| --- |
| njalo (‘always’) |
| nje ('thus/in this manner') |
| impela ('truly') |

Derived adverbs

|  |
| --- |
| kabili (‘twice’) |
| kakhulu (‘greatly’) |

Nouns used as adverbs

(As for noun lemmatisation in Category 1)

|  |
| --- |
| kumuntu |
| ngabantu |
| njengomuthi |

Adverb prefixes ([AdvPre])

|  |
| --- |
| nga- |

# CATEGORY 5: Subject concords ([SC])

|  |  |  |  |
| --- | --- | --- | --- |
| **Persons & classes** |  | **Std** | **Consecutive** |
| 1st Sing. |  | ngi- | nga- |
| 1st Pl. |  | si- | sa- |
| 2nd Sing. |  | u- | wa- |
| 2nd Pl. |  | ni- | na- |
| Class 1 | umuntu | u- | wa- |
| Class 1a | ubaba | u- | wa- |
| Class 2 | abantu | ba- | ba- |
| Class 2a | obaba | ba- | ba- |
| Class 3 | umuthi | u- | wa- |
| Class 4 | imithi | i- | ya- |
| Class 5 | ikati | li- | la- |
| Class 6 | amakati | a- | a- |
| Class 7 | isinkwa | si- | sa- |
| Class 8 | izinkwa | zi- | za- |
| Class 9 | imvu  inja | i- | ya- |
| Class 10 | izimvu  izinja | zi- | za- |
| Class 11 | uthi  uluthi | lu- | lwa- |
| Class 14 | utshani  ubuntu | bu- | ba- |
| Class 15 | ukuhamba | ku- | kwa- |
| Class 16 | phakathi | ku- | kwa- |
| Class 17 | ukunene | ku- | kwa- |

Indefinite and classless

|  |  |
| --- | --- |
| Indefinite | ku- (e.g. *kuyashisa)* |
| Classless |  |

# CATEGORY 6: Object concords ([OC])

|  |  |
| --- | --- |
| **Persons & classes** | **Object**  **concord** |
| 1st p.s. | -ngi- |
| 1st p.p. | -si- |
| 2nd p.s. | -ku- |
| 2nd p.p. | -ni- |
| Class 1 | -m(u)- |
| Class 1a | -m(u)- |
| Class 2 | -ba- |
| Class 2a | -ba- |
| Class 3 | -wu- |
| Class 4 | -yi- |
| Class 5 | -li- |
| Class 6 | -wa- |
| Class 7 | -si- |
| Class 8 | -zi- |
| Class 9 | -yi- |
| Class 10 | -zi- |
| Class 11 | -lu- |
| Class 14 | -bu- |
| Class 15 | -ku- |
| Class 16 |  |
| Class 17 | -ku- |

# CATEGORY 7: Demonstratives ([Dem])

|  |  |  |  |
| --- | --- | --- | --- |
| **Persons & classes** | **Demonstratives** | | |
|  | **Pos 1 *this*** | **Pos 2 *that*** | **Pos 3 *yonder*** |
| 1st p.s. | lo | lowo | lowaya |
| 1st p.p. | o | lowo | lowaya |
| 2nd p.s. | laba | labo | labaya |
| 2nd p.p. | laba | labo | labaya |
| 1 | lo | lowo | lowaya |
| 1a | lo | lowo | lowaya |
| 2 | laba | labo | labaya |
| 2a | laba | labo | labaya |
| 3 | lo | lowo | lowaya |
| 4 | le | leyo | leya |
| 5 | leli | lelo | leliya |
| 6 | la | lawo | lawaya |
| 7 | lesi | leso | lesiya |
| 8 | lezi | lezo | leziya |
| 9 | le | leyo | leya |
| 10 | lezi | lezo | leziya |
| 11 | lolu | lolo | loluya |
| 14 | lobu | lobo | lobuya |
| 15 | lokhu | lokho | lokhuya |
| 16 | lapha | lapho | laphaya |

# CATEGORY 8: Quantitatives

Quantitative Stem ([QuantStem])

E.g. -dwa, -nke

Quantitative Concord ([QuantConc])

|  |  |
| --- | --- |
| **Persons & classes** | **Quantitative concord** |
| 1st Sing. | -mi- |
| 1st Pl. | -thu- |
| 2nd Sing. | -khe- |
| 2nd Pl. | -nu- |
| Class 1 | -khe- |
| Class 1a | -khe- |
| Class 2 | -bo- |
| Class 2a | -bo- |
| Class 3 | -wo- |
| Class 4 | -yo- |
| Class 5 | -lo- |
| Class 6 | -wo- |
| Class 7 | -so- |
| Class 8 | -zo- |
| Class 9 | -yo- |
| Class 10 | -zo- |
| Class 11 | -lo- |
| Class 14 | -bo- |
| Class 15 | -kho- |

# CATEGORY 9: Relatives

Relative Stem ([RelStem])

E.g. -thile, -phi

Relative Concord ([RelConc])

|  |  |
| --- | --- |
| **Persons & classes** | **Relative concord** |
| Class 1a | o- |
| Class 2 | aba- |
| Class 2a | aba- |
| Class 3 | o- |
| Class 4 | e- |
| Class 5 | eli- |
| Class 6 | a- |
| Class 7 | esi- |
| Class 8 | ezi- |
| Class 9 | e- |
| Class 10 | ezi- |
| Class 11 | olu- |
| Class 14 | obu- |
| Class 15 | oku- |
| Class 17 | oku- |

Relative Suffix ([RelSuf])

|  |
| --- |
| -yo |

# CATEGORY 10: Pronouns

Emphatic

Absolute Pronouns ([AbsPron])

|  |  |
| --- | --- |
| **Persons & classes** | **Absolute Pronoun** |
| 1st Pl. | thina |
| 2nd Sing. | wena |
| 2nd Pl. | nina |
| Class 1 | yena |
| Class 1a | yena |
| Class 2 | bona |
| Class 2a | bona |
| Class 3 | wona |
| Class 4 | yona |
| Class 5 | lona |
| Class 6 | wona |
| Class 7 | sona |
| Class 8 | zona |
| Class 9 | yona |
| Class 10 | zona |
| Class 11 | lona |
| Class 14 | bona |
| Class 15 | khona |

Possessive Pronouns ([PossPron])

|  |  |
| --- | --- |
| **Persons & classes** | **Possessive Pronoun** |
| 1st Pl. | yethu |
| 2nd Sing. | yakhe |
| 2nd Pl. | yenu |
| Class 1 | yakhe |
| Class 1a | yakhe |
| Class 2 | yabo |
| Class 2a | yabo |
| Class 3 | yawo |
| Class 4 | yayo |
| Class 5 | yalo |
| Class 6 | yawo |
| Class 7 | yaso |
| Class 8 | yazo |
| Class 9 | yayo |
| Class 10 | yazo |
| Class 11 | yalo |
| Class 14 | yabo |
| Class 15 | yakho |

Pronoun Stem ([PronStem])

|  |  |
| --- | --- |
| **Persons & classes** | **Pronoun Stem** |
| 1st Pl. | -thu |
| 2nd Sing. | -khe |
| 2nd Pl. | -nu |
| Class 1 | -khe |
| Class 1a | -khe |
| Class 2 | -bo |
| Class 2a | -bo |
| Class 3 | -wo |
| Class 4 | -yo |
| Class 5 | -lo |
| Class 6 | -wo |
| Class 7 | -so |
| Class 8 | -zo |
| Class 9 | -yo |
| Class 10 | -zo |
| Class 11 | -lo |
| Class 14 | -bo |
| Class 15 | -kho |

Demonstrative Pronouns: See Category 7

Pronoun Suffix ([PronSuf])

|  |
| --- |
| -na |

# CATEGORY 11: Copulatives

Copulative Verbs ([Cop]): see Category 2

|  |
| --- |
| -ba |
| -be (perfect form of ba-) |

Copulative Particles ([CopPre]): see Category 12

|  |
| --- |
| ng- |
| y- |
| w- |
| aku- |
| akusi- |
|  |
| u- (See subject concords) |
| zi - (See subject concords) |

Demonstrative Copulatives ([DemCop]): see Category 20

# CATEGORY 12: Particles and prepositions

|  |
| --- |
| Locative / temporal <existence of this category to be discussed> |
| Copulative: ng-, y-, w-, aku-, akusi- |
| Copulative particles resembling subject concords: see Category 5  In most cases copulative “particles” used for adjectives, resemble the subject concord, but not always:  Ngingumuntu > ngi-[SC]-ng-[CopPre]-umuntu[NStem]  Umuntu muhle > mu-[AdjConc]-hle[AdjStem]  Izitsha zinhle > zin-[AdjConc]-hle[AdjStem] |

# CATEGORY 13: Secondary morphemes

|  |  |  |
| --- | --- | --- |
| Future | [Fut] | -za-, -zo-, -zoku-, -zuku-, -ya-, -yo-, -yoku-, -yuku- |
| Progressive | [Pro] | -sa-, -se- |
| Potential | [Pot] | -nga- |
| Exclusive | [ExclNeg] | -ka- |
| Negative | [NegPre] | -a-, -ka-, -nga-, -nge-, -anga-, -i- |
| Comparative | [Comp] | isi-, use- |

# CATEGORY 14: Ideophones ([Ideoph])

E.g. du, mbo, klebhu

<there are a few hundred>

# CATEGORY 15: Possessive concords

Possessive concords ([PossConc])

|  |  |
| --- | --- |
| **Persons & classes** | **Possessive Concord** |
| Class 1 | wa- |
| Class 1a | wa- |
| Class 2 | ba- |
| Class 2a | ba- |
| Class 3 | wa- |
| Class 4 | ya- |
| Class 5 | la- |
| Class 6 | a- |
| Class 7 | sa- |
| Class 8 | za- |
| Class 9 | ya- |
| Class 10 | za- |
| Class 11 | lwa- |
| Class 14 | ba- |
| Class 15 | kwa- |

Possessive prefix “ka” ([PossKA])

# CATEGORY 16: Interjections ([Interjec])

E.g. *ai*!, yebo!, hhayi!

# CATEGORY 17: Conjunctions ([Conj])

|  |
| --- |
| uma |
| ukuba |
| ukuze |
| ngoba |

# CATEGORY 18: Interrogatives

Question words ([Interrog]), e.g.

|  |
| --- |
| ubani? ‘who’ |
| yini ‘what’ |

Question particles ([InterrogSuf]), e.g.

|  |
| --- |
| -phi? |
| -ni? |
| -ngaki? |
| -ini ? |

# CATEGORY 19: Abbreviations ([Abbr])

E.g. Mdi., Mna., Mnz., Nkk., njl.

# CATEGORY 20: Demonstrative Copulatives ([DemCop])

|  |  |  |  |
| --- | --- | --- | --- |
| **Persons & classes** | **1** | **2** | **3** |
| Class 1 | nangu | nango | nanguya |
| Class 1a | nangu | nango | nanguya |
| Class 2 | nampa | nampo | nampaya |
| Class 2a | nampa | nampo | nampaya |
| Class 3 | nanku | nanko | nankuya |
| Class 4 | nansi | nanso | nansiya |
| Class 5 | nanti | nanto | nantiya |
| Class 6 | nanka | nanko | nankaya |
| Class 7 | nasi | naso | nasiya |
| Class 8 | nazi | nazo | naziya |
| Class 9 | nansi | nanso | nansiya |
| Class 10 | nazi | nazo | naziya |
| Class 14 | nampu | nampo | nampuya |
| Class 15 | nakhu  naku | nakho  nako | nakhuya  nakuya |

# CATEGORY 21: Enumeratives

Enumerative stem ([EnumStem]):

|  |
| --- |
| -nye |
| -phi |
| -ne |
| -mbe |

Enumerative Concord ([EnumConc]):

|  |  |
| --- | --- |
| **Persons & classes** | **Enumerative Concord** |
| Class 1 | mu- |
| Class 1a | mu- |
| Class 2 | ba- |
| Class 2a | ba- |
| Class 3 | mu- |
| Class 4 | mi |
| Class 5 | li- |
| Class 6 | ma- |
| Class 7 | si- |
| Class 8 | zi- |
| Class 9 | yi- |
| Class 10 | zi- |
| Class 11 | lu- |
| Class 14 | bu- |
| Class 15 | ku- |
| Class 17 | ku- |

# CATEGORY 22: Tense markers

|  |  |  |
| --- | --- | --- |
| Present tense | [Pres] | -ya- |
| Perfect | [Perf] | -ile, -e |
| Future tense  (See also Category 13) | [Fut] | za-, -zo-, -zoku-, -zuku-, -ya-, -yo-, -yoku-, -yuku-- |
| Negative present | [NegPre] | -ka-, -nga-, -anga, -i |
| Negative future | [NegFut] | -ku- |

# CATEGORY 23: Foreign ([Foreign])

Tag used for any foreign words e.g. finance, management, service.

# CATEGORY 24: Proper name ([ProperName])

Tag used for proper names.

# General principles

The following general principles apply:

* Annotation on the morphological analysis layer should be in excess of 98%
* The general principles of the Text Encoding Initiative P5 Guidelines (TEI P5; <http://www.tei-c.org/Guidelines/>) should be followed when in doubt.

# Changing the protocol

Since this protocol is considered to be a dynamic document, it is subject to change from time to time. For purposes of good governance, the following principles and procedures should be followed:

* The language expert (in consultation with the project leader and project manager) has the final say in changing this procedure document, and is the only authoritative person who might make final changes to the protocol.
* If an annotator (or other project member) wishes change a specification, s/he should inform the linguistic manager by email: Wikus.Pienaar@nwu.ac.za. The linguistic manager in liaison with the project leader considers the request and adds the change to the protocol document. The protocol document is saved with a new version number. All other annotators are then informed of the change, and requested to change previous annotations, where applicable.

# Authoritative references

The following language-specific works of reference should be considered authoritative when in doubt:

* Doke, C. M. 1973. Textbook of Zulu grammar. Cape Town: Maskew Miller Longman.
* Poulos, G. and C. T. Msimang 1998. A linguistic analysis of Zulu. Cape Town: Via Afrika.
* Taljaard, P. C. and S. E. Bosch 1988. Handbook of IsiZulu. Pretoria: Van Schaik.

# Roles and contact details

The following roles in this project can be identified:

**Linguistic manager**: Responsible for overall linguistic quality in liaison with the language experts and the project leader.

*Wikus Pienaar*

*Wikus.Pienaar@nwu.ac.za*

**Project leader**: Responsible for successful technical delivery of project.

*Martin Puttkammer*

*Martin.Puttkammer@nwu.ac.za*

**Project manager**: Responsible for timeous delivery of project, within budget. If you suspect that you will not be able to deliver on a set milestone, contact the project manager.

*Sunny Gent*

*Sunny.Gent@nwu.ac.za*

**Language expert**: Responsible for language correctness.

**Annotator**: Responsible for annotating the corpus, according to the above procedures and principles.