



water & forestry

Department:
Water Affairs and Forestry
REPUBLIC OF SOUTH AFRICA

**DWAF Water Resource Study in
Support of the ASGISA EC
Mzimvubu Development Project**

**Existing Water Supply
Infrastructure Assessment**

VOLUME 1 OF 5

FEBURARY 2009

PREPARED BY:



AGES
Private Bag X9063
EAST LONDON 5200



BKS (PTY) LTD
PO Box 3173
PRETORIA 0001

DWA WATER RESOURCE STUDY IN SUPPORT OF THE ASGISA-EC MZIMVUBU DEVELOPMENT PROJECT

LIST OF STUDY REPORTS

REPORT	DWA report number
Summary Report	P WMA 12/000/00/3609
Existing water supply infrastructure assessment	P WMA 12/000/00/3609 Volume 1 of 5
Agricultural assessment and irrigation water use	P WMA 12/000/00/3609 Volume 2 of 5
Groundwater assessment	P WMA 12/000/00/3609 Volume 3 of 5
Water resources assessment	P WMA 12/000/00/3609 Volume 4 of 5
Assessment of potential for pumped storage and hydropower schemes	P WMA 12/000/00/3609 Volume 5 of 5
Rainwater Harvesting	P WMA 12/000/00/3609
An assessment of rain-fed crop production potential in South Africa's neighboring countries	P RSA 000/00/12510

Title *Existing infrastructure assessment*

Authors *FST Consulting Engineers*

Project Name *DWAF Water Resource Study in Support of the AsgiSA-EC
Mzimvubu Development Project*

Status of Report *Final*

DWAF Report No *P WMA 12/000/00/3609 - Volume 1 of 5*

First Issue *8 September 2008*

Final Issue *22 April 2009*

BKS (PTY) LTD

Approved for BKS (Pty) Ltd



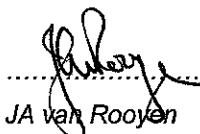
JD Rossouw

Deputy Study Leader

DEPARTMENT OF WATER AFFAIRS

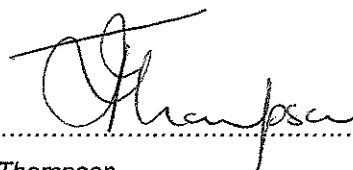
Directorate: National Water Resource Planning

Approved for the Department of Water Affairs and Forestry:



JA van Rooyen

Director: National Water Resource Planning



I Thompson

Chief Engineer: NWRP (South)

ABBREVIATIONS

DWAF	-	Department of Water Affairs and Forestry
WSDP	-	Water Services Development Plan
DM	-	District Municipality
O & M	-	Operation and Maintenance
GIS	-	Geographical Information System

EXISTING WATER SUPPLY INFRASTRUCTURE ASSESSMENT

CONTENTS

Page No.

1. INTRODUCTION.....	1
1.1 Scope of Report	1
1.2 Background	1
1.3 Overview of Study Area	2
2. SOURCES OF INFORMATION.....	3
2.1 Information Obtained from the Department of Water Affairs and Forestry (DWAF)	3
2.2 Information Obtained from District Municipalities.....	4
2.2.1 Alfred Nzo District Municipality (ANDM)	4
2.2.2 O R Tambo District Municipality (ORTDM).....	4
2.2.3 Ukhahlamba District Municipality (UDM)	4
2.2.4 Sisonke District Municipality (SDM).....	4
2.3 Information Obtained from Consulting Engineers	5
2.4 Contact Persons.....	5
3. WATER INFRASTRUCTURE IN DISTRICT MUNICIPALITIES	5
3.1 Alfred Nzo District Municipality.....	5
3.1.1 Existing Water Supply Schemes.....	5
3.1.2 Planned Schemes.....	6
3.1.3 Detailed Descriptions of Water Supply Schemes	6
3.1.4 Waste Water Treatment Works	6
3.2 Ukhahlamba District Municipality	6
3.2.1 Existing Water Supply Schemes.....	6
3.2.2 Planned Water Supply Schemes	7
3.2.3 Detailed Descriptions of Water Supply Schemes	7
3.2.4 Waste Water Treatment Works	7
3.3 O R Tambo District Municipality.....	7
3.3.1 Existing Water Supply Schemes.....	7
3.3.2 Planned Water Supply Schemes	7
3.3.3 Planned Schemes.....	8
3.3.4 Waste Water Treatment Works	8
3.4 Sisonke District Municipality.....	8
3.4.1 Existing Water Supply Schemes.....	8
3.4.2 Planned Water Supply Schemes	8
3.4.3 Detailed Descriptions of Water Supply Schemes	8
3.4.4 Waste Water Treatment Works	8
4. CONCLUSION	8

APPENDICES

APPENDIX A	CONTACT PERSONS
APPENDIX B	AVAILABLE GIS DATA
APPENDIX B-1	Available GIS Data : Alfred Nzo District Municipality
APPENDIX B-2	Available GIS Data : Ukhahlamba District Municipality
APPENDIX B-3	Available GIS Data : O R Tambo District Municipality
APPENDIX C	SOURCES OF INFORMATION FOR SCHEME NAMES
APPENDIX C-1	Sources of Information for Scheme Names : Alfred Nzo District Municipality
APPENDIX C-2	Sources of Information for Scheme Names : Ukhahlamba District Municipality
APPENDIX C-3	Sources of Information for Scheme Names : O R Tambo District Municipality

FIGURES

FIGURE1 – Flow Diagrams for Elundini Local Municipality

MAPS – SCHEME SHAPES

MAP ANDM-1	Alfred Nzo District Municipality, Mzimvubu Local Municipality
MAP ANDM-2	Alfred Nzo District Municipality, Matatiele Local Municipality
MAP UKDM-1	Ukhahlamba District Municipality, Elundini Local Municipality
MAP ORTDM-1	OR Tambo District Municipality, Mbizana Local Municipality
MAP ORTDM-2	OR Tambo District Municipality, Mhlontlo Local Municipality
MAP ORTDM-3	OR Tambo District Municipality, Ntabankulu Local Municipality
MAP ORTDM-4	OR Tambo District Municipality, Nyandeni Local Municipality
MAP ORTDM-5	OR Tambo District Municipality, Port St Johns Local Municipality
MAP ORTDM-6	OR Tambo District Municipality, Qaukeni Local Municipality

EXISTING WATER SUPPLY INFRASTRUCTURE ASSESSMENT

1. INTRODUCTION

1.1 Scope of Report

The initial purpose of this task was to identify, describe and map all existing and planned bulk and potable water supply infrastructure in the Mzimvubu Catchment Area by means of a desktop study. However, as a result of the *All Towns Reconciliation Strategy Study* by the Department of Water Affairs and Forestry (DWAF) to evaluate all water supply infrastructures it was concluded that this task would be reduced and only the information collated to date would be presented to prevent duplication of work. This report provides the information that has been collated to date and this will be a benefit to the *All Towns* and future study teams who will be carrying out a full infrastructure assessment. The report also presents sources of information, details of information available and notes the information gaps determined.

A synopsis of the history of water development in the study area, which was substantially part of the former Transkei, is provided in Section 1.2 as this aspect has a bearing on the present status of water infrastructure.

All sources of information used in establishing the database are discussed in Section 1.3 below. Reliance has been placed on information provided in GIS format from the Department of Water Affairs and Forestry (DWAF) and the Water Service Development Plans. No Water Board has as yet been established in the study area.

The amount of information available regarding the existing and planned water infrastructure varies in terms of quantity and quality. All information from the various sources has been noted in the relevant sections with no field verification of the data.

No inter-basin transfers of water were identified except for parts of the Libode Regional Water Supply inside the study area that are supplied with water from the adjacent catchment.

The water supply infrastructure for the 210 identified water supply schemes are presented on a District Municipality basis as the District Municipalities are the Water Services Authorities and most information sources are split either on a District Municipality or a Local Municipality basis.

1.2 Background

The background to infrastructure development within the study area is difficult to describe, given the lack of historical data records. Development may be divided into three distinct chronological phases related to political developments within the Transkei region, in which the majority of the study area falls.

The period pre-1974, i.e. pre-Transkeian “Independence”

Before 1974 and Transkei “Independence” and based on the limited data available, it would appear that each urban area had some form of water supply scheme operated by the local municipal authority. Rural areas were either unserved or served by small groundwater schemes. In the majority of rural cases, water was and still is obtained in the traditional manner, i.e. women fetch water from the local rivers and streams, often walking long distances in the process.

The Period 1974 to 1994, i.e. Transkei “Independence”

During this period of Transkei “Independence” from 1974 to 1994 urban and regional water infrastructure schemes were implemented, for instance the Libode Regional Water Supply Scheme. Very little information on smaller rural village schemes is available, but it is known that small-scale groundwater and spring development schemes continued to be implemented mainly by NGO’s.

In general, although new water infrastructure development took place during this period, in most instances the existing and new infrastructure was not adequately maintained, due to the lack of funding, with the result that many of the schemes were in a state of disrepair by 1994.

The Period Post-1994, i.e. Post-Transkei “Independence”

In the period post 1994, following the transition to a democratic South Africa and post-Transkei “Independence” there has been significant investment in RDP water supply infrastructure via the Provincial Department of Housing and Local Government (MIP and CMIP Programmes) for the urban areas and DWAF’s Community Water Supply and Sanitation (CWSS) and BoTT Programmes for the rural areas and later by the Municipal Infrastructure Grant (MIG) program for both rural and urban water supply.

Unfortunately due to the various changes in authorities responsible for water, over the years, information is generally not recorded and filed in a central place for each municipality.

1.3 Overview of Study Area

The Mzimvubu catchment area covers four district municipalities, incorporating eight local municipalities. There are eleven formal towns within the study area. These are detailed in Table 1 below.

TABLE 1 – MUNICIPALITIES AND TOWNS

District Municipality	Local Municipality	Main Town
Alfred Nzo	Umzimvubu	Maluti
		Mount Frere
		Mount Ayliff
	Matatiele	Matatiele
OR Tambo	Nyandeni	-
	Qaukeni/ Ingquza Hill	Flagstaff
	Mbizana	-
	Mhlontlo	Qumbu
		Tsolo
Ntabankulu	Ntabankulu	
Ukhahlamba	Elundini	Maclear Ugie Mount Fletcher
Sisonke	Greater Kokstad	Kokstad

2. SOURCES OF INFORMATION

This section details the sources of information available and provides the contact details for the various authorities to facilitate the collection of the outstanding information. All contact details are provided in Appendix A. All information collected is provided digitally in Appendix E on a digital versatile disk in a sleeve.

2.1 Information Obtained from the Department of Water Affairs and Forestry (DWAf)

The following information has been sourced from DWAf :

- Department of Water Affairs and Forestry (July 2004): Report No. P WMA 12/000/00/0304. **Mzimvubu to Keiskamma Water Management Area, Mzimvubu-Mbashe ISP Area Internal Strategic Perspective**, Prepared by Ninham Shand in association with Tlou & Matjie, FST Consulting and Umvoto.
- Department of Water Affairs and Forestry (February 2005): Report No. P WMA 12/000/00/0305 **Mzimvubu to Keiskamma Water Management Area, Mzimvubu-Mbashe ISP Area Internal Strategic Perspective**, Prepared by Ninham Shand in association with Tlou & Matjie, FST Consulting and Umvoto.
- Department of Water Affairs and Forestry (July 2002). Report No.: P 12000/00/0101 **Mzimvubu to Keiskamma Water Management Area Water Resources Situation Assessment**, Prepared by Ninham Shand Consulting Engineers..
- Department of Water Affairs and Forestry Eastern Cape Water Supply GIS information.
- Department of Water Affairs and Forestry South Africa (2005), Report No. P WMA 12/000/00/0505. **Mzimvubu River Basin Water Utilization**

Opportunities, Prepared by ECH Sellick for the Directorate: National Water Resource Planning.

- DWAF Eastern Cape GIS information.
- Department of Water Affairs and Forestry (2001). Report No. PT200-00-0801. **Mtata River Basin Study**, Prepared by FST Consulting Engineers and WRP Consulting Engineers.

2.2 Information Obtained from District Municipalities

2.2.1 Alfred Nzo District Municipality (ANDM)

The following documents and information are available :

- Alfred Nzo District Municipality Draft Water Services Development Plan (2005/06).
- Project and Population list Operation & Maintenance from Alfred Nzo District Municipality

Further information could be available from the Municipal Infrastructure Grant (MIG) Project Unit Manager. This information was not made available to the project team.

Officials at Matatiele Local Municipality were willing to assist with details by liaising with ANDM.

2.2.2 OR Tambo District Municipality (ORTDM)

The only document obtained was the OR Tambo District Municipality Water Services Development Plan 2006. However Ms Msebi, in the water department, indicated that she will be able to provide business plans and technical report information on identified schemes. Previous consultants involved in the preparation of water services development plans may be able to provide detailed data. Consultants believed to have been involved include HHO, Africon and Arcus Gibb.

2.2.3 Ukhahlamba District Municipality (UDM)

The documents received were :

- Ukhahlamba District Municipality Water Services Development Plan (March 2008).
- Ukhahlamba District Municipality, Elundini Local Municipality, Mount Fletcher Villages Bulk Water Supply Scheme Phase II, Project No. : EC1044, Revised Design Report, (April 2007) Prepared by Ron Beard Associates

Further information may be available from Ms X Besengile at the Ukhahlamba District Municipality.

2.2.4 Sisonke District Municipality (SDM)

The only document received was the Sisonke District Municipality Water Services Development Plan 2005/2006 Review which is substantially incomplete.

The municipal officials indicated that they do not have any further information and referred us to the following parties as possible sources of information :

- Ninham Shand, who is willing to provide some information at a cost.
- BKS who is working on the new Water Services Development review which is still to be completed.
- Bigen Africa Services.

2.3 Information Obtained from Consulting Engineers

The following consultants provided information :

- Bigen Africa Services - Sisonke District Municipality GIS and Cad data.
- UWP Consulting Engineers - Mzimvubu Catchment Development Study GIS Request.

To fully determine the details of all existing water supply schemes the consultants who drafted the various editions of the water sector plans and water service development plans should be approached to request access to the data they would have collected.

2.4 Contact Persons

A number of contacts were made in the process of searching for information. These people, area of knowledge and contact details are listed in Appendix A.

3. WATER INFRASTRUCTURE IN DISTRICT MUNICIPALITIES

The information available at this stage was sufficient to enable the mapping of extents of the water schemes. Some verification of the mapped information was to be achieved through further communication and liaison with the Contact Persons listed in Appendix A. Site visits were envisaged to obtain scheme details and confirm the accuracy of the information, however none were carried out with the curtailment of the project.

3.1 Alfred Nzo District Municipality

The sources of information are the following identified and utilised :

- DWAF GIS database
- Project and Population list Operation & Maintenance from Alfred Nzo District Municipality
- Alfred Nzo District Municipality Draft Water Services Development Plan (2005/06).

3.1.1 Existing Water Supply Schemes

The DWAF GIS database provided the scheme shapes but did not identify the scheme names, nor did the WSDP. These shapes are detailed in MAP ANDM-1 and ANDM-2.

The O&M scheme names have been used to name the schemes, where it was possible to identify the schemes.

The DWAF GIS database provides a spatial indication of the extent of the schemes. Appendix B1 lists 92 schemes identified in the database. It can be seen that spatially the water source, bulk infrastructure, reservoirs and reticulation are generally identified. However discussions with DWAF indicate there is a low reliability of the data. Most fields in the database are unpopulated and the details of sizes, capacity and flows are unknown.

The draft WSDP 2006 contains some details of the existing water supply schemes, unfortunately this data is not geographically located. Based on the various sets of data the scheme names have been identified where possible. This information is presented in Appendix B-1 and Appendix C-1. The draft WSDP 2006 does not provide much information and there is still substantial further work required to adequately describe the schemes and determine their adequacy.

3.1.2 Planned Schemes

Planned schemes within the study area should be available from the ANDM Project Management Unit. This information was not made available.

3.1.3 Detailed Descriptions of Water Supply Schemes

No detailed scheme descriptions or system flow diagrams of the schemes have been prepared or identified within the data available.

3.1.4 Waste Water Treatment Works

Four waste water treatment works within the area were identified. These are detailed in Appendix D.

3.2 Ukhahlamba District Municipality

3.2.1 Existing Water Supply Schemes

Refer to MAP UKDM-1 for the identified water schemes in the area. The sources of information are :

- Ukhahlamba District Municipality Water Services Development Plan (March 2008).
- Ukhahlamba District Municipality, Elundini Local Municipality, Mount Fletcher Villages Bulk Water Supply Scheme Phase II, Project No. : EC1044, Revised Design Report, (April 2007) Prepared by Ron Beard Associates
- UWP GIS database
- DWAF GIS database

The DWAF GIS database provided the scheme shapes and the UWP database provided the scheme names.

There are twelve water supply schemes identified in the DWAF GIS database and these are presented in Appendix B-2. In general the water sources are unknown although the bulk mains, reservoirs and reticulation are spatially identified. The quality of the information is poor and sizes and capabilities are not available. In order to reconcile the information between the WSDPs and the various GIS databases the various schemes' names were identified, where possible, and this information is listed in Appendix C-2.

3.2.2 Planned Water Supply Schemes

The WSDP indicated that there are three large planned schemes, namely; Mount Fletcher Bulk Water Supply Scheme, Elundini Ward 7 Rudimentary Water Supply and the Elundini Ward 1 to 5 Water Supply. The design report for Mount Fletcher Bulk Water Supply Scheme was used to identify the extents of the schemes, however the extent of the schemes could not be clearly defined because there is no relationship between some village names on the design report and the village name database.

3.2.3 Detailed Descriptions of Water Supply Schemes

The schematic layouts of water supply schemes within the Elundini Local Municipality Schemes have been extracted from the WSDP and incorporated in this report as Figure 1. No detailed descriptions were prepared.

3.2.4 Waste Water Treatment Works

Five waste water treatment works are identified. These are detailed in Appendix D.

3.3 O R Tambo District Municipality

The source of information for the OR Tambo District Municipality (ORTDM) is the OR Tambo District Municipality Water Services Development Plan 2006 and the DWAF GIS database.

3.3.1 Existing Water Supply Schemes

Due to the manner in which the information is presented in the WSDP, some scheme extents cannot be identified but the villages supplied could be identified. However there is a correlation between the DWAF GIS information and the Water Services Development Plan (WSDP) information in some areas.

Refer to MAP ORTDM-1 to 6 for the identified water schemes split into the Local Municipalities. There are one hundred and five water supply schemes identified within the ORTDM.

Based on the various sets of data the scheme names have been identified where possible. This information is presented in Appendix B-3 and Appendix C-3.

3.3.2 Planned Water Supply Schemes

The planned schemes in the WSDP could not be identified due to the manner in which the WSDP information is presented.

3.3.3 Planned Schemes

Planned schemes within the study area should be available from the OR Tambo DM Project Management Unit. This information was not requested.

3.3.4 Waste Water Treatment Works

No details of waste water treatment works were determined.

3.4 Sisonke District Municipality

The source of information for the entire Sisonke District Municipality is the Water Services Development Plan 2005/2006 Review.

3.4.1 Existing Water Supply Schemes

Very little information could be determined from the WSDP review. The MAP SDM-1 indicates the extent of information collected which was negligible.

Refer to MAP SDM – 1 for the identified information in the area, which is very little as no GIS information had yet been collected.

The catchment areas with missing information are in the KwaZulu Natal (KZN) area and include quaternary catchments T31A, T31B, T31C, T31D, T31F and T31G; T32A, T32B, T32C and T32D.

The KZN GIS information available was not adequate for this exercise.

3.4.2 Planned Water Supply Schemes

The planned schemes on the WSDP could not be identified.

3.4.3 Detailed Descriptions of Water Supply Schemes

No detailed scheme descriptions or system flow diagrams of the schemes have been prepared or identified within the data available.

3.4.4 Waste Water Treatment Works

No details of waste water treatment works were determined.

4. CONCLUSION

The information supplied in this report is raw information that has been gathered from different sources and it has not been verified.

The original objective of this Task 4 was to identify the existing and planned water supply infrastructure in the catchment area and that has largely not been achieved. Although there is a fair amount of spatial information available the actual details of capacities and sizes were not available. Hence there are substantial gaps in the collected information. All data collected has been presented with the goal of simplifying the tasks of future researches into the details of existing infrastructure.

REFERENCES

1. Department of Water Affairs and Forestry (July 2004): Report No. P WMA 12/000/00/0304. **Mzimvubu to Keiskamma Water Management Area, Mzimvubu-Mbashe ISP Area Internal Strategic Perspective**, Prepared by Ninham Shand in association with Tlou & Matjie, FST Consulting and Umvoto.
2. Department of Water Affairs and Forestry (February 2005): Report No. P WMA 12/000/00/0305 **Mzimvubu to Keiskamma Water Management Area, Mzimvubu-Mbashe ISP Area Internal Strategic Perspective**, Prepared by Ninham Shand in association with Tlou & Matjie, FST Consulting and Umvoto.
3. Department of Water Affairs and Forestry (July 2002). Report No.: P 12000/00/0101 **Mzimvubu to Keiskamma Water Management Area Water Resources Situation Assessment**, Prepared by Ninham Shand Consulting Engineers.
4. Department of Water Affairs and Forestry Eastern Cape Water Supply GIS information.
5. Department of Water Affairs and Forestry South Africa (2005), Report No. P WMA 12/000/00/0505. **Mzimvubu River Basin Water Utilization Opportunities**, Prepared by ECH Sellick for the Directorate : National Water Resource Planning.
6. DWAf Eastern Cape Water Supply GIS information.
7. Department of Water Affairs and Forestry (2001). Report No. PT200-00-0801. **Mtata River Basin Study**, Prepared by FST Consulting Engineers and WRP Water Resources Planning and Conservation.
8. Alfred Nzo District Municipality Draft Water Services Development Plan (2005/06).
9. Project and Population list Operation & Maintenance from Alfred Nzo District Municipality.
10. OR Tambo District Municipality Water Services Development Plan 2006.
11. Ukhahlamba District Municipality Water Services Development Plan (March 2008).
12. Ukhahlamba District Municipality, Elundini Local Municipality, Mount Fletcher Villages Bulk Water Supply Scheme Phase II, Project No. : EC1044, Revised Design Report, (April 2007) Prepared by Ron Beard Associates.
13. Sisonke District Municipality Water Services Development Plan 2005/2006 Review.
14. Bigen Africa Services - Sisonke District Municipality GIS and Cad data.
15. UWP Consulting Engineers - Mzimvubu Catchment Development Study GIS Request.

CONTACT PERSONS

ORGANISATION	CONTACT PERSON	POSITION	TELEPHONE	E-MAIL	AREA OF KNOWLEDGE
Dept Water Affairs & Forestry	Mr G Muthumuni	GIS Manager	043 604 5555	muthumg@dwaf.gov.za	All GIS data for the Eastern Cape
Alfred Nzo District Municipality	Ms K Dweba	PMU Manager	039 254 5186	dwebak@andm.gov.za	Should be able to provide information on all projects in the DM.
Alfred Nzo District Municipality	Mr Z Gulwa	O & M Manager	039 254 6445	gulwaz@andm.gov.za	Provided information on schemes under the DM's operation and maintenance.
O R Tambo District Municipality	Ms N Msebi	Programme Manager	047 501 6445	nombasam@ortambodm.org.za	Should be able to provide details of all schemes in the DM.
Sisonke District Municipality	Ms N Ndlela	-	039 834 1505	-	An official at the DM's Water Services Authority Department.
Sisonke District Municipality	Ms V Zondwayo	-	039 727 2723	-	An official at Sisonke DM working in the Kokstad area.
Ukhahlamba District Municipality	Ms X Besengile	Project Technician	045 979 3074	xolelwa@ukhahlamba.gov.za	Provided information on Elundini LM. She will be able to assist on schemes under construction and schemes that are planned.
Ninham Shand	Mr D Shaw	Engineer	083 6361 334	duncan.shaw@shands.co.za	Consulting Engineer who has done work on the Greater Kokstad area.
Intatakusa Consulting Bigen Africa	Mr M J Potgieter	Engineer	031 717 2580	-	Consulting Engineer who has done review of the WSDP for Sisonke DM.
Matatiele Local Municipality	Mr Mkhondweni	-	083 748 4799	-	Technical official at Matatiele LM - may be able to assist with some documents.
Matatiele Local Municipality	Mr Ngozwana	-	079 504 5762	-	Technical official at Matatiele LM - may be able to assist with some documents.

SUBSCHEME ID	DWAF ID	Name	Water Source	Bulk	Reservoirs	Reticulation
DWAF						
AN_SC_000001	Unknown	Mandleni	E	1	1	1
AN_SC_000002	Unknown	Ntenetyana	E	1	1	1
AN_SC_000003	Unknown	Unknown	D	1	1	1
AN_SC_000004	Unknown	Unknown	E	1	1	1
AN_SC_000005	Unknown	Hagwini	?	1	1	1
AN_SC_000006	Unknown	Unknown	D	1	1	1
AN_SC_000007	Unknown	Sikemane	E	1	1	1
AN_SC_000008	Unknown	Mombeni	?	?	?	?
AN_SC_000009	Unknown	Betshwana-A	C	1	1	1
AN_SC_000010	Unknown	Betshwana-C	E	1	1	1
AN_SC_000011	Unknown	Betshwana-B	?	?	?	?
AN_SC_000012	Unknown	Dantee	?	?	?	?
AN_SC_000013	Unknown	Dundee	?	1	1	1
AN_SC_000014	Unknown	Mvalweni	?	1	1	1
AN_SC_000015	Unknown	Phepheni	?	1	1	1
AN_SC_000016	Unknown	Lower Brooksnek	D	1	1	1
AN_SC_000017	Unknown	Upper Brooksnek	D	1	1	?
AN_SC_000018	Unknown	Putukezi	D	1	1	1
AN_SC_000019	EC/RW/057	Malongwe / Mt Frere - 18 St	B	?	1,2	1
AN_SC_000020	Unknown	Mjikelweni-B	D,E	1	1	1
AN_SC_000021	Unknown	Unknown	E	1	1	1
AN_SC_000022	Unknown	Unknown	D	1	1	1
AN_SC_000023	Unknown	Unknown	E	1	1	1
AN_SC_000024	Unknown	Unknown	E	1	1	1
AN_SC_000025	Unknown	Unknown	D	1	1	1
AN_SC_000026	Unknown	Unknown	E	1	1	1
AN_SC_000027	Unknown	Unknown	?	1	1	1
AN_SC_000028	Unknown	Malongwe Bott	D,E	1	1	1
AN_SC_000029	Unknown	Unknown	?	1	1,2	1
AN_SC_000030	Unknown	Mhlotsheni	E	1	1	1
AN_SC_000031	Unknown	Unknown	D	1	1	1
AN_SC_000032	Unknown	Ndakeni-L	E	1	1	1
AN_SC_000033	Unknown	Unknown	D	1	1	1
AN_SC_000034	Unknown	Upper Mkhemane	D,E	1	1	1
AN_SC_000035	Unknown	Mvenyane Mission 1	D	1	1	1
AN_SC_000036	Unknown	Upper Mvenyane	E	1	1	1
AN_SC_000037	Unknown	Mvenyane Mission 2	D,E	1	1	1
AN_SC_000038	Unknown	Colana	D,E	1	1	1
AN_SC_000039	Unknown	Ntsimangweni	E	1	1	1
AN_SC_000040	Unknown	Mawusheni	D,E	1	1	1
AN_SC_000041	Unknown	Siquingeni	D	1	1	1
AN_SC_000042	Unknown	Mwaca	E	1	1	1
AN_SC_000043	Unknown	Unknown	E	1	1	1
AN_SC_000044	Unknown	Siquoqobeni	E	1	1	1
AN_SC_000045	Unknown	Lubhalasi	?	1	1	1
AN_SC_000046	Unknown	Sidakeni	D	1	1	1
AN_SC_000047	Unknown	Sipolweni	?	1	1	1
AN_SC_000048	Unknown	Ngwengweni	?	1	1	1
AN_SC_000049	Unknown	Unknown	?	?	?	?
AN_SC_000050	Unknown	Mzongwana	?	?	1	1
AN_SC_000051	Unknown	Moyeni / Makhoba	D,?	?	1	1
AN_SC_000052	Unknown	Maluti Regional	D,E	1	1,2	1
AN_SC_000053	Unknown	Leketlane	?	1	1	1
AN_SC_000054	Unknown	Phalane	D	1	1	1
AN_SC_000055	Unknown	Epiphany	D	1	1	1
AN_SC_000056	Unknown	Epiphany-A	D	1	1	1
AN_SC_000057	Unknown	Ndakeni-I	D	1	1	1
AN_SC_000058	Unknown	Lukholweni	D	1	1	1
AN_SC_000059	Unknown	Unknown	D	1	1	1
AN_SC_000060	Unknown	Mjikelweni-A	D	1	1	1
AN_SC_000061	Unknown	Ezipampireni / Qili	D	1	1	1
AN_SC_000062	Unknown	Nkalweni	D	1	1	1
AN_SC_000063	Unknown	Bubesi-B	D	1	1	1
AN_SC_000064	Unknown	Bubesi-A	D	1	1	1
AN_SC_000065	Unknown	Unknown	D,E	1	1	1
AN_SC_000066	Unknown	Unknown	D	1	1	1
AN_SC_000067	Unknown	Unknown	D	1	1	1
AN_SC_000068	Unknown	Unknown	E	1	1	1
AN_SC_000069	Unknown	Caba	D	1	1	1
AN_SC_000070	Unknown	Unknown	?	?	1	1

Legend

Database	
?	Not Available
1	DWAF
2	BKS
3	UWP
Water Source - DWAF	
A	Borehole
B	Dam
C	Fountain
D	Spring
E	Weir
F	Well
?	Unknown

SUBSCHEME ID	DWAF ID	Name	Water Source	Bulk	Reservoirs	Reticulation
DWAF						
AN_SC_000071	Unknown	Unknown	?	1	1	1
AN_SC_000072	Unknown	Unknown	D	1	1	?
AN_SC_000073	Unknown	KwaMashu	?	1	1	?
AN_SC_000074	Unknown	Unknown	D,?	1	1	?
AN_SC_000075	Unknown	Fiva Bamanzi	D	1	1	1
AN_SC_000076	Unknown	Rolweni	D	1	1	1
AN_SC_000077	Unknown	Bethesda	D	1	1	1
AN_SC_000078	Unknown	Unknown	?	1	1	?
AN_SC_000079	Unknown	Unknown	D	1	1	1
AN_SC_000080	Unknown	Unknown	?	1	1	?
AN_SC_000081	Unknown	Semonkong	D	1	1	?
AN_SC_000082	Unknown	Unknown	?	1	1	?
AN_SC_000083	Unknown	Upper Mnyamana	D	1	1	1
AN_SC_000084	Unknown	Unknown	D	1	1	?
AN_SC_000085	Unknown	Unknown	?	?	1	1
AN_SC_000086	Unknown	Gxaku-C	D	1	1	1
AN_SC_000087	Unknown	Gxaku-A	D	1	1	1
AN_SC_000088	Unknown	Gxaku-B	D	1	1	1
AN_SC_000089	EC/RW/063	Unknown	E	1	1,2	1
AN_SC_000090	EC/RW/037	George Moshesh	E	?	1,2	1
AN_SC_000091	EC/RW/044	Thaba Chicha	?	?	?	?
AN_SC_000092	EC/RW/071	Unknown	?	?	?	?

Legend

Database	
?	Not Available
1	DWAF
2	BKS
3	UWP
Water Source - DWAF	
A	Borehole
B	Dam
C	Fountain
D	Spring
E	Weir
F	Well
?	Unknown

Scheme ID	SUBSCHEME ID	DWAF ID	Name	Water Source	Bulk	Reservoirs	Reticulation
	DWAF						
199	UKHAH_SC_000003	Unknown	Unknown	E	1	1	1
200	UKHAH_SC_000005	Unknown	Unknown	E	1	1	1
201	UKHAH_SC_000006	Unknown	Unknown	?	?	?	1
202	UKHAH_SC_000007	Unknown	Unknown	E	1	1	1
203	UKHAH_SC_000009	Unknown	Unknown	?	1	1	1
204	UKHAH_SC_000010	Unknown	Unknown	?	1	?	1
205	UKHAH_SC_000011	Unknown	Unknown	?	1	1	1
206	UKHAH_SC_000012	Unknown	Unknown	?	1	1	1
207	UKHAH_SC_000013	Unknown	Unknown	?	1	1	?
208	UKHAH_SC_000014	Unknown	Unknown	?	?	1	1
209	UKHAH_SC_000021	Unknown	Unknown	?	1	1	?
210	UKHAH_SC_000023	EC/RW/072	#N/A	?	1	1	1

Legend

Database	
?	Not Available
1	DWAF
2	BKS
3	UWP
Water Source - DWAF	
A	Borehole
B	Dam
C	Fountain
D	Spring
E	Weir
F	Well
?	Unknown

SUBSCHEME ID DWAF	DWAF ID	Name	Water Source	Bulk	Reservoirs	Reticulation
ORT_SC_000001	Unknown	Unknown	D	1	1	1
ORT_SC_000002	Unknown	Unknown	D	?	?	?
ORT_SC_000006	Unknown	Unknown	D	1	1	1
ORT_SC_000007	Unknown	Dumsi	D	1	1	?
ORT_SC_000008	Unknown	Esikwateni	D	1	1	1
ORT_SC_000009	Unknown	Ngqelemane	D	1	?	1
ORT_SC_000010	Unknown	Unknown	D	1	?	?
ORT_SC_000012	Unknown	Unknown	?	1	1	?
ORT_SC_000013	Unknown	Unknown	A	1	?	1
ORT_SC_000014	Unknown	Upper Chulunca	D	1	1	1
ORT_SC_000016	Unknown	Unknown	E	1	1	1
ORT_SC_000017	Unknown	Unknown	D	1	1	1
ORT_SC_000018	Unknown	Unknown	E	1	1	1
ORT_SC_000019	Unknown	Unknown	E	1	1	1
ORT_SC_000020	Unknown	Unknown	E	?	1	1
ORT_SC_000021	Unknown	Selenkama	E	?	1	1
ORT_SC_000022	Unknown	Unknown	D	1	1	1
ORT_SC_000023	Unknown	Caba	?	1	?	1
ORT_SC_000024	Unknown	Unknown	A	1	1	?
ORT_SC_000026	Unknown	Unknown	D	1	1	1
ORT_SC_000028	Unknown	Unknown	?	1	1	1
ORT_SC_000030	Unknown	Unknown	?	?	1	1
ORT_SC_000031	Unknown	Unknown	A	1	?	?
ORT_SC_000032	Unknown	Unknown	A	1	1	1
ORT_SC_000037	Unknown	Mvumelwano	A	1	1	1
ORT_SC_000038	Unknown	Nkozo	?	1	1	?
ORT_SC_000040	Unknown	Unknown	?	1	1	?
ORT_SC_000046	Unknown	Unknown	?	1	1	1
ORT_SC_000047	Unknown	Unknown	A,D	1	1	?
ORT_SC_000048	Unknown	Unknown	?	1	1	?
ORT_SC_000049	Unknown	Unknown	?	1	1	1
ORT_SC_000050	Unknown	Unknown	?	1	1	?
ORT_SC_000051	Unknown	Unknown	A	?	1	1
ORT_SC_000053	Unknown	Unknown	E	?	1	?
ORT_SC_000054	Unknown	Unknown	A	1	1	?
ORT_SC_000055	Unknown	Unknown	?	1	1	?
ORT_SC_000056	Unknown	Unknown	?	1	1	?
ORT_SC_000057	Unknown	Unknown	A	1	1	1

Legend

Database	
?	Not Available
1	DWAF
2	BKS
3	UWP
Water Source - DWAF	
A	Borehole
B	Dam
C	Fountain
D	Spring
E	Weir
F	Well
?	Unknown

SUBSCHEME ID	DWAF ID	Name	Water Source	Bulk	Reservoirs	Reticulation
DWAF						
ORT_SC_000058	Unknown	Unknown	?	1	1	?
ORT_SC_000059	Unknown	Unknown	A	1	1	1
ORT_SC_000060	Unknown	Unknown	?	1	1	1
ORT_SC_000063	Unknown	Unknown	A,D	1	1	?
ORT_SC_000065	Unknown	Unknown	?	1	1	1
ORT_SC_000066	Unknown	Magcakini	D	1	1	?
ORT_SC_000067	Unknown	Unknown	A	1	1	1
ORT_SC_000069	Unknown	Unknown	A	1	1	1
ORT_SC_000073	Unknown	Libode Regional WSS	?	1	1,2	1
ORT_SC_000075	Unknown	Unknown	?	1	1	?
ORT_SC_000080	Unknown	Mbhongweni	D	1	1	1
ORT_SC_000082	Unknown	Mceba	A	1	1,2	1
ORT_SC_000089	Unknown	Unknown	D	1	1	1
ORT_SC_000090	Unknown	Hayibeke	A	1	1	1
ORT_SC_000094	Unknown	Khubusi	A	1	1	1
ORT_SC_000095	Unknown	Mphetswa	A	1	?	?
ORT_SC_000096	Unknown	Unknown	?	1	?	1
ORT_SC_000098	Unknown	Qhanqu	A,D	1	1	1
ORT_SC_000099	Unknown	Lutsheko-A / Mvenyane-B	A	1	1	1
ORT_SC_000100	Unknown	Unknown	C	1	?	?
ORT_SC_000101	Unknown	Unknown	?	1	1	?
ORT_SC_000103	Unknown	Mvenyane-C	A	1	1	1
ORT_SC_000104	Unknown	Khalankomo	E	1	1	1
ORT_SC_000105	Unknown	Unknown	?	1	1	?
ORT_SC_000106	Unknown	Gwadana	E	1	?	1
ORT_SC_000107	Unknown	Malandini	A	1	?	1
ORT_SC_000108	Unknown	Unknown	E	1	1	1
ORT_SC_000109	Unknown	Ntaboduli-C	?	1	1	1
ORT_SC_000110	Unknown	Unknown	?	1	?	1
ORT_SC_000111	Unknown	Ngele	D	?	1	1
ORT_SC_000112	Unknown	Unknown	A	1	?	1
ORT_SC_000113	Unknown	Unknown	A	1	?	1
ORT_SC_000114	Unknown	Unknown	A	1	?	1
ORT_SC_000115	Unknown	Unknown	?	?	1	1
ORT_SC_000116	Unknown	KAMASTONE	D	1	1	1
ORT_SC_000117	Unknown	Unknown	?	1	1	?
ORT_SC_000119	Unknown	Gununu***	A	1	1	1
ORT_SC_000120	Unknown	Unknown	D	1	1	1
ORT_SC_000121	Unknown	Unknown	E	1	1	1
ORT_SC_000122	Unknown	Unknown	A	1	1	1
ORT_SC_000123	Unknown	Xhibeni	E	1	1	?
ORT_SC_000126	Unknown	Unknown	E	1	1	1
ORT_SC_000127	Unknown	Unknown	A,D	1	1	1
ORT_SC_000128	Unknown	Unknown	D	1	1	1
ORT_SC_000129	Unknown	Maqanyeni	E	?	1	1
ORT_SC_000130	Unknown	Unknown	E	1	1	1
ORT_SC_000133	Unknown	Unknown	?	1	1	1
ORT_SC_000150	Unknown	Unknown	E	1	1	1
ORT_SC_000151	Unknown	Gwali	?	?	1	1
ORT_SC_000152	Unknown	Unknown	?	?	1	1
ORT_SC_000153	Unknown	Unknown	D	1	1	1
ORT_SC_000154	Unknown	Unknown	?	1	1	?
ORT_SC_000155	Unknown	Unknown	D	1	?	?

Legend

Database	
?	Not Available
1	DWAF
2	BKS
3	UWP
Water Source - DWAF	
A	Borehole
B	Dam
C	Fountain
D	Spring
E	Weir
F	Well
?	Unknown

SUBSCHEME ID	DWAF ID	Name	Water Source	Bulk	Reservoirs	Reticulation
DWAF						
ORT_SC_000158	Unknown	Unknown	?	1	1	1
ORT_SC_000160	Unknown	Unknown	?	1	?	?
ORT_SC_000162	Unknown	Thembeni	E	1	?	?
ORT_SC_000165	Unknown	Unknown	?	1	?	?
ORT_SC_000166	Unknown	Mlomo	?	?	?	?
ORT_SC_000167	Unknown	Libode Regional WSS	?	1	1,2	?
ORT_SC_000168	Unknown	Mgundundlovu	?	?	?	?
ORT_SC_000170	Unknown	Unknown	?	?	?	?
ORT_SC_000171	Unknown	Unknown	?	1	?	?
ORT_SC_000180	Unknown	Unknown	?	?	?	?
ORT_SC_000205	Unknown	Unknown	B	1	1	1
ORT_SC_000262	Unknown	Siliindeni	D	1	1	1
ORT_SC_000263	Unknown	Mdabukweni	D	1	1	?
ORT_SC_000264	EC/RW/099	Tabankulu	?	?	?	?
ORT_SC_000269	EC/RW/103	Tsolo	?	?	?	?

Legend

Database	
?	Not Available
1	DWAF
2	BKS
3	UWP
Water Source - DWAF	
A	Borehole
B	Dam
C	Fountain
D	Spring
E	Weir
F	Well
?	Unknown

SUBSCHEME ID	DWAF ID	Name	Water Source	Bulk	Reservoirs	Reticulation
DWAF						
		Matatiele DM				
?	Unknown	Matatiele	4	4	4	4
?	Unknown	Sandfontein	4	4	4	4
?	Unknown	Bultfontein	4	4	4	4
?	Unknown	Kokstad	4	4	4	4
?	Unknown	Cedarville	4	4	4	4
?	Unknown	Thuthukani	4	4	4	4
?	Unknown	Pakkies	4	4	4	4
?	Unknown	Ekuthuleni	4	4	4	4
?	Unknown	Kransdraai	4	4	4	4
?	Unknown	Hill Top	4	4	4	4
?	Unknown	Middelbult	4	4	4	4
?	Unknown	Vaalbank	4	4	4	4
?	Unknown	Makhoba	4	4	4	4
?	Unknown	Wansbeck	4	4	4	4
?	Unknown	Franklin	4	4	4	4
?	Unknown	Swartberg 1	4	4	4	4
?	Unknown	Swartberg 2	4	4	4	4

Legend

Database	
?	Not Available
1	DWAF
2	BKS
3	UWP
4	Bigen Africa
Water Source - DWAF	
A	Borehole
B	Dam
C	Fountain
D	Spring
E	Weir
F	Well
?	Unknown

SOURCE OF INFORMATION FOR SCHEME NAMES – ALFRED NZO DISTRICT MUNICIPALITY

QUATENARY CATCHMENTS	WATER SUPPLY SCHEME NAME	SOURCE OF INFORMATION
T33E	Bethesda	O & M Schemes
T33E	Bubesi	O & M Schemes
T33D	Caba	O & M Schemes
T33F	Fiva Bamanli	O & M Schemes
T33B	George Moshesh	O & M Schemes
T34D	Gxaku A	O & M Schemes
T31F	Ezipamprini	O & M Schemes
T33D	Leketlane	O & M Schemes
T33F	Lukholweni - B	O & M Schemes
T33B	Madlangala Extension	O & M Schemes
T31E	Makhoba	O & M Schemes
T33A	Belfort/Maluti Regional	O & M Schemes
T33F	Mjikelweni	O & M Schemes
T33F	Emnyaneni	O & M Schemes
T31C	Mzongwana	O & M Schemes
T31H	Epiphany - A	O & M Schemes
T33F	Qili	O & M Schemes
T33F	Rolweni	O & M Schemes
T33F	Semonkong	O & M Schemes
T33F	Sidakeni	O & M Schemes
R31D	Thaba Chicha	O & M Schemes
T33A	Tsita	O & M Schemes
T32F	Upper Brooksnek	O & M Schemes
T32F	Lower Brooksnek	O & M Schemes
T32F	Pepeni	O & M Schemes
T32F	Dundee (Lambasi – H)	O & M Schemes
T32F	Ngwengweni	O & M Schemes
T32F	Sipolweni	O & M Schemes
T32F	Mvalweni	O & M Schemes

QUATENARY CATCHMENTS	WATER SUPPLY SCHEME NAME	SOURCE OF INFORMATION
T32E	Betshwana	O & M Schemes
T32F	Lubhalasi	O & M Schemes
T32F	Sikemane	O & M Schemes
T32F	Mombeni	O & M Schemes
T31H	Siqhingeni	O & M Schemes
T31J	Mwaca (Gogela / Kokela)	O & M Schemes
T32E	Sikroqobeni	O & M Schemes
T31J	Ndakeni	O & M Schemes
T31J	Mhlotsheni	O & M Schemes
T33G	Ntenetyana	O & M Schemes
T31H	Mawusheni	O & M Schemes
T34G	Mandleni – B	O & M Schemes
T31H	Mvenyane 1 – A	O & M Schemes
T31H	Mvenyane – Lower	O & M Schemes
T31H	Upper Mvenyane	O & M Schemes
T31H	Ntsimanuweni - A	O & M Schemes
T31H	Colana	O & M Schemes
T33G	Lugangeni	O & M Schemes
T33G	Hagwini	O & M Schemes
T34H	Mjikelweni - A	O & M Schemes
T34H	Xhokonxa	O & M Schemes
T34H	Ngqwarha	O & M Schemes
T33G	Malongwe Bott	O & M Schemes
T33H	Mt Frere - 18 Villages Stand-alone Schemes	O & M Schemes
T34J	Mt Frere - 18 Villages Stand-alone Schemes	O & M Schemes
T34H	Mt Frere - 18 Villages Stand-alone Schemes	O & M Schemes

SOURCE OF INFORMATION FOR SCHEME NAMES – UKHAHLAMBA DISTRICT MUNICIPALITY

QUATERNARY CATCHMENTS	WATER SUPPLY SCHEME NAME	SOURCE OF INFORMATION
T34B	Elundini Rudimentary Water Supply	WSDP
T34C	Mount Fletcher Villages Bulk Water Supply	RBA Design Report
T34D	Mount Fletcher Bulk Water Supply	WSDP
T34D	Mount Fletcher LWSS	DWAF GIS/ UWP GIS
	Kgalatsu	DWAF GIS / Village Names
	Makguleng	DWAF GIS/ Village Names
	Moreneng	DWAF GIS/ Village Names
	Mathizeni	DWAF GIS/ Village Names
	Xoloti	DWAF GIS/ Village Names
	Ndesi	DWAF GIS/ Village Names
	Gxaku	DWAF GIS/ Village Names
T35D	Maclear Local Water Supply Scheme	UWP GIS Info
T35F	Ugie Local Water Supply Scheme	UWP GIS Info

SOURCE OF INFORMATION FOR SCHEME NAMES – O R TAMBO DISTRICT MUNICIPALITY

QUATERNARY CATCHMENTS	WATER SUPPLY SCHEME NAME	SOURCE OF INFORMATION
T32G	There is no scheme name available.	DWAF GIS
QUATERNARY CATCHMENTS	WATER SUPPLY SCHEME NAME	SOURCE OF INFORMATION
T34H	Hayibeke	DWAF GIS
	Khubusi	DWAF GIS
	Mdabukweni	DWAF GIS
	Qhangu	DWAF GIS
	Khalankomo	DWAF GIS
	Ngele	DWAF GIS
	Unknown	DWAF GIS
	Lwandlana N	WSDP
	Njanisweni	WSDP
	Nobamba	WSDP
	Skwajini	WSDP
	Gqili A	WSDP
	Ngwangxasini	WSDP
	Mafusini – D	WSDP
	Gora	WSDP
	Gqini	WSDP
	Ngxotho A	WSDP
	Mampola	WSDP
	Ngqele	WSDP
	Mahlungulu	WSDP
T34J	Ngxotho B	WSDP
	Mbokodwebomvu	WSDP
	Mangwareni – CC	WSDP
	Gqunu	WSDP
T34K	Mbombo	WSDP
	Ngonyameni	WSDP
	Zahobeni – A	WSDP
	Mangxamtu	WSDP

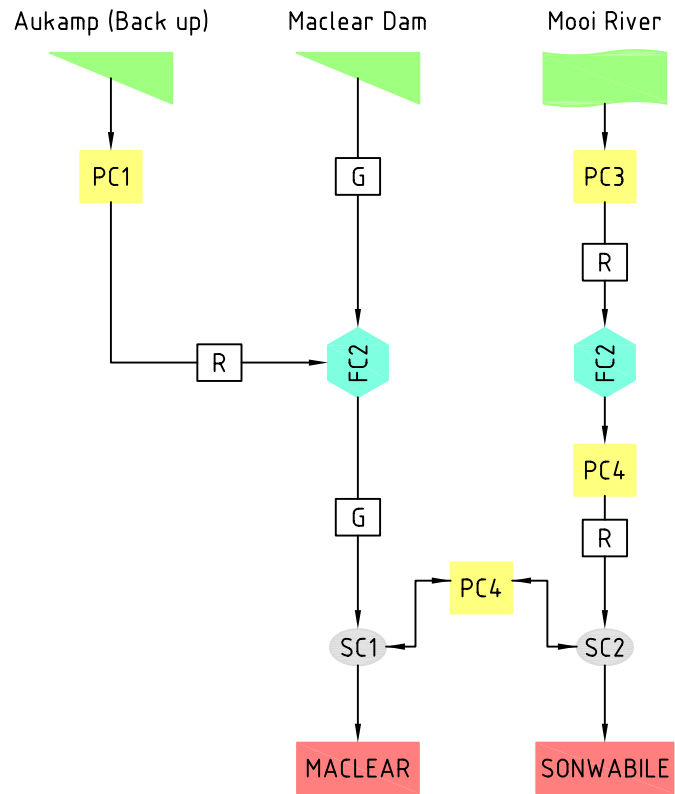
QUATERNARY CATCHMENTS	WATER SUPPLY SCHEME NAME	SOURCE OF INFORMATION
T34K (cont)	Zahobeni – B	WSDP
	Hlabathi - A	WSDP
	Gubeni – B	WSDP
	Gubeni - A	WSDP
	Bomvini – D	WSDP
	Bomvini – C	WSDP
	Ngcolo	WSDP
	Mpoza H	WSDP
	Mpoza I	WSDP
	Mvane	WSDP
	Buhlungwana	WSDP
	Tina Falls	WSDP
	Dumba - A	WSDP
	Nmgwenyama	WSDP
Mampingeni	WSDP	
Manzana	WSDP	
T35E	Maladini	DWAF GIS data
	Gwadana	DWAF GIS data
	Ntaboduli	DWAF GIS data
	Nyango	DWAF GIS data
	Mangweni	DWAF GIS data
	Ntubeni	DWAF GIS data
	Gununu	DWAF GIS data
	Belenkence	
	Shukunxa	
	Mandyiba	
	Nqgongqweni	
T35K	Culunca	WSDP
	Mahlungulu	WSDP
	Qumbu LWSS	DWAF GIS
	Mvumelwano	DWAF

SANITATION

Information reported in Draft Alfred Nzo District Municipality Water Service Development Plan and Ukhahlamba District Municipality Water Services Development.

Waterborne sanitation systems are limited to the main towns, although this level of service is not necessarily applicable throughout all the respective towns.

AMATHOLE DISTRICT MUNICIPALITY	DETAIL PROVIDED
Mt Ayliff	Sewered waterborne sanitation to a 1,2 Ml/day activated sludge wastewater treatment works. The low cost housing area of Tjoksville is currently un-serviced (digesters were planned for the area but have not been installed due to the extent of the rock in the area).
Mt Frere	The town is currently served by VIP's and a bucket system. A new 2,0 Ml/day activated sludge plant, to replace the current oxidation ponds, and the bulk connectors are currently being constructed. There is no internal reticulation in place as yet.
Maluti	The town is serviced by septic tanks and VIP's, which are in a poor condition. The town has 2 No. oxidation pond systems, 1 No. at the Mountain Battalion Camp and 1 No. near the college (to be confirmed).
UKHAHLAMBA DISTRICT MUNICIPALITY	
Maclear	1,4 Ml/day Three stage Phoredox plant
Ugie	Oxidation pond system with 1 300 m ³ Anaerobic pond, 13 000 m ³ facultative pond and 6 075 m ³ maturation pond, reportedly no effluent all evaporation (or leakage?). New 8 Ml/day conventional plant proposed.
Mt Fletcher	Hospital - Oxidation ponds consisting of primary pond - 2 500 m ³ ; secondary pond - 1 250 m ³ , 1 x maturation pond – 1 250 m ³ Prison - Oxidation ponds; reportedly inadequate Town - Oxidation ponds – reportedly adequate, effluent returned to stream.



Source	Storage (Ml)	Yield (Ml/d)
Maclear Dam	?	?
Aukamp Dam	?	?
Mooi River	0	?

Description of WTW

FC1: Conventional Water Treatment Works - Capacity 720 kl/d (New settling tanks not used due to continuous pump failure)

FC2: Two package plants drawing water from the Mooi River

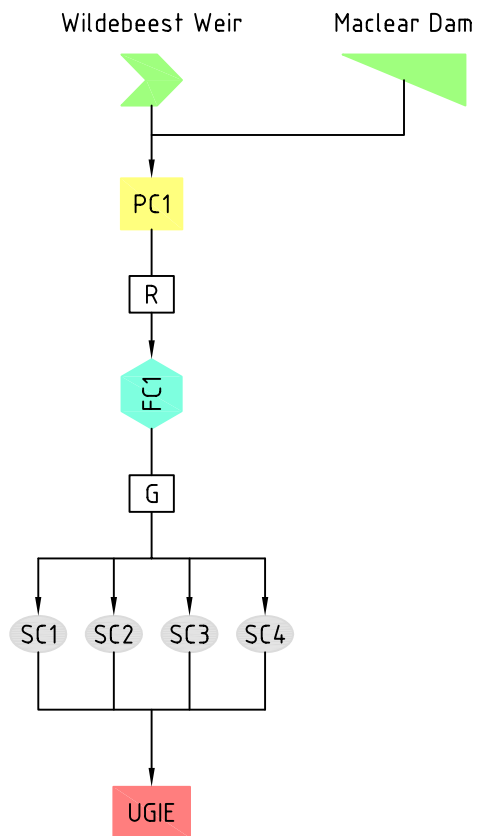
Capacity 254 kl/d

Reservoirs

SC1: 800 kl/d (Highlying areas of Maclear town experiencing low pressure problems)

SC2: 150 k

MACLEAR LOCAL WATER SUPPLY



Source	Storage (MI)	Yield (MI/d)
Wildebeest Wier		
Ugie Dam (Future)	6000	
Total	<u>6000</u>	<u>0</u>

Description WTW

FC1: Conventional Water Treatment Works Capacity 6 MI/d (was 1.65MI/d)

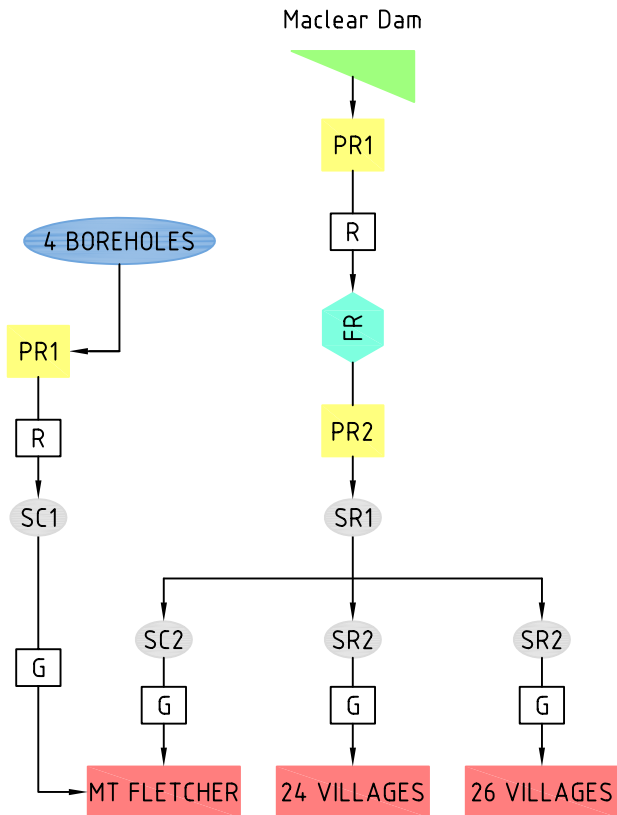
PC: Present pump set from Wildebeest River capacity 1.6 MI/d

Reservoirs

SC1,SC2: 2 existing(one to PG Bison's reservoir) - 2 MI

SC3,SC4: 2 to be constructed in 2009 (funded,designed&approved) - 2 x 3 MI

UGIE LOCAL WATER SUPPLY

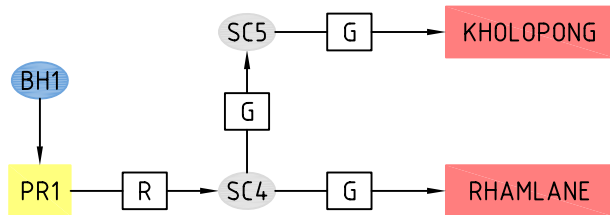
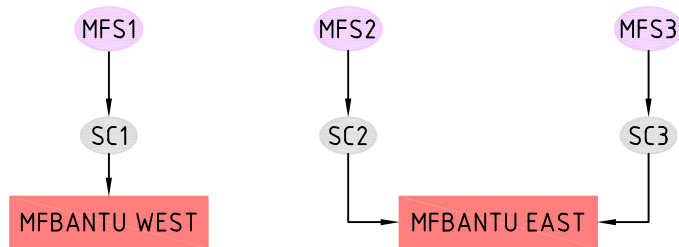


Source	Storage (ML)	Yield (ML/d)
4 Boreholes		0.111
Mt Fletcher Dam	500	1.17
Total	<u>500</u>	<u>1.281</u>

Description WTW
 FR: Capacity 80 l/s for 18 hours (1.17 ML/d) - easily upgradable

Reservoirs
 SR1: 5.25 ML
 SC2: 2.1 ML
 SR2: 24 hour storages capacity for 24 villages
 SR3: 24 hours storage capacity for 26 villages

MT FLETCHER LOCAL WATER SUPPLY



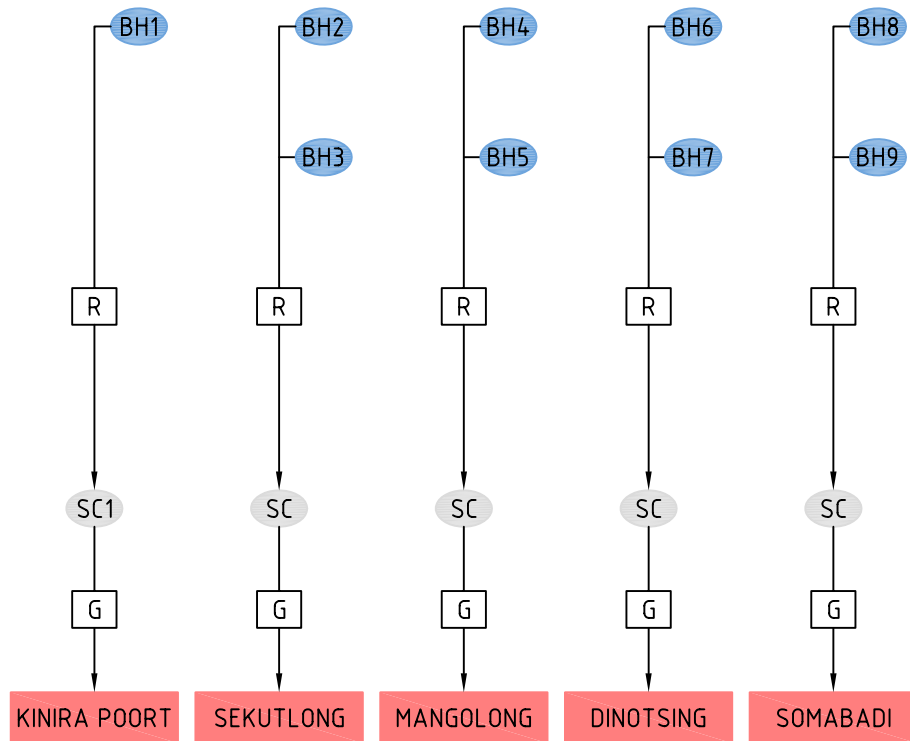
Source	Storage (MI)	Yield (MI/d)
Spring (MFS1)		0.016
Spring (MFS2)		0.035
Spring (MFS3)		0.033
BH1 (EC-T35-097)		0.173
BH1 (EC-T35-090)		0.000
BH1 (EC-T35-091)		0.000
Total	<u>0.000</u>	<u>0.257</u>

Description WTW
NONE

Reservoirs

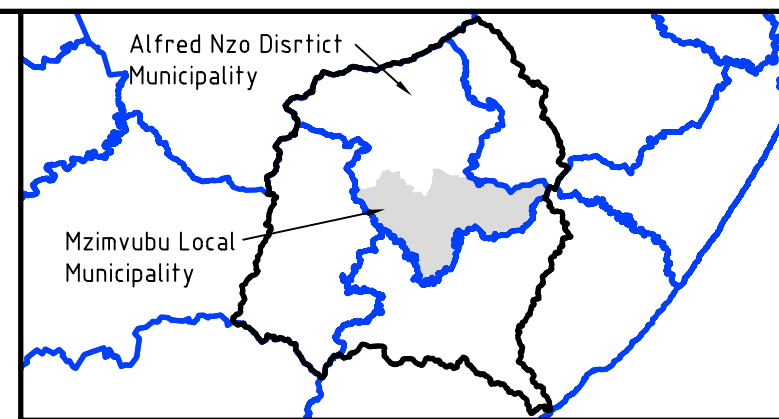
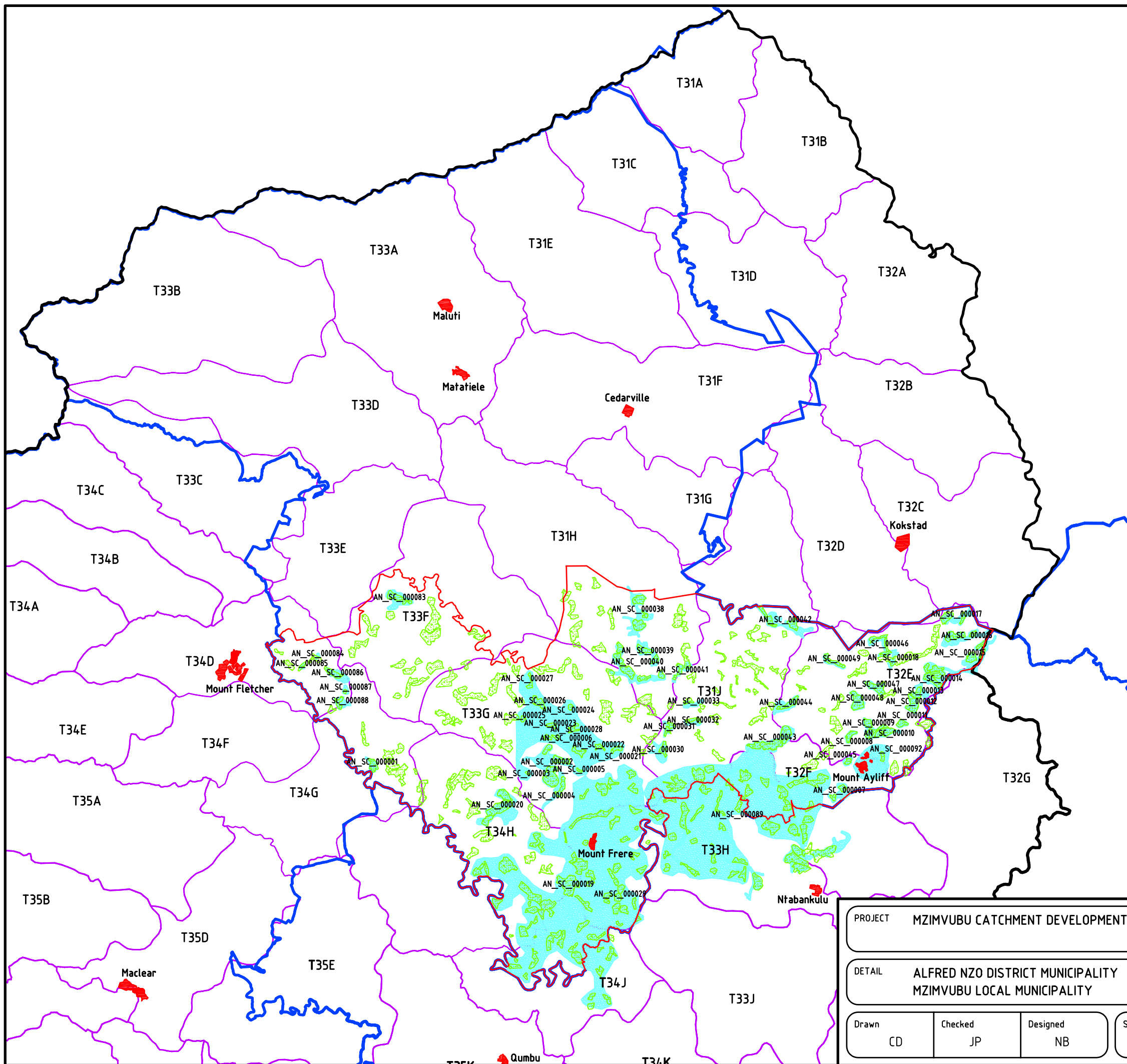
SC1, SC2, SC3, SC4, SC5, SC6, SC7: ? MI/d

ELUNDINI WARD 7 RUDIMENTARY WATER SUPPLY



Source	Storage (Ml)	Yield (Ml/d)
BH1 (EC-T33-075)		0.180
BH2 (T30568)		0.072
BH2 (BH2)		0.030
BH4 (T30567C)		0.040
BH5 (EC-T33-080)		0.030
BH6 (EC-T33-076)		0.030
BH7 (EC-T33-077)		0.010
BH8 (EC-T33-078)		0.030
BH9 (EC-T33-079)		0.180
Total	<u>0.000</u>	<u>0.602</u>
Reservoirs		
SC1, SC2, SC3, SC4: ? Ml/d		
SR5: ? Ml/d		

ELUNDINI WARD 7 RUDIMENTARY WATER SUPPLY



MZIMVUBU CATCHMENT AREA

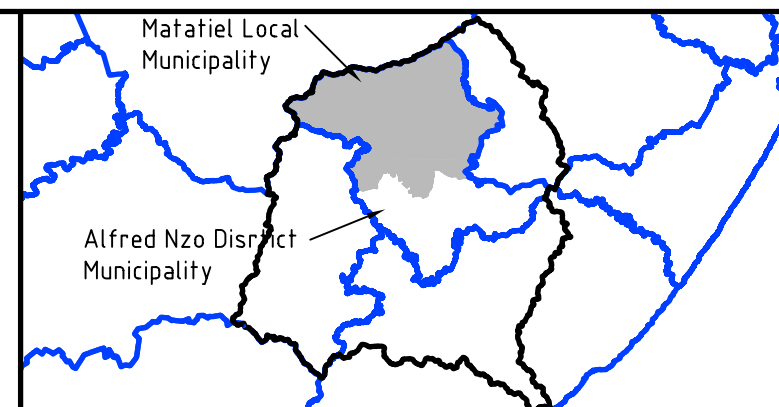
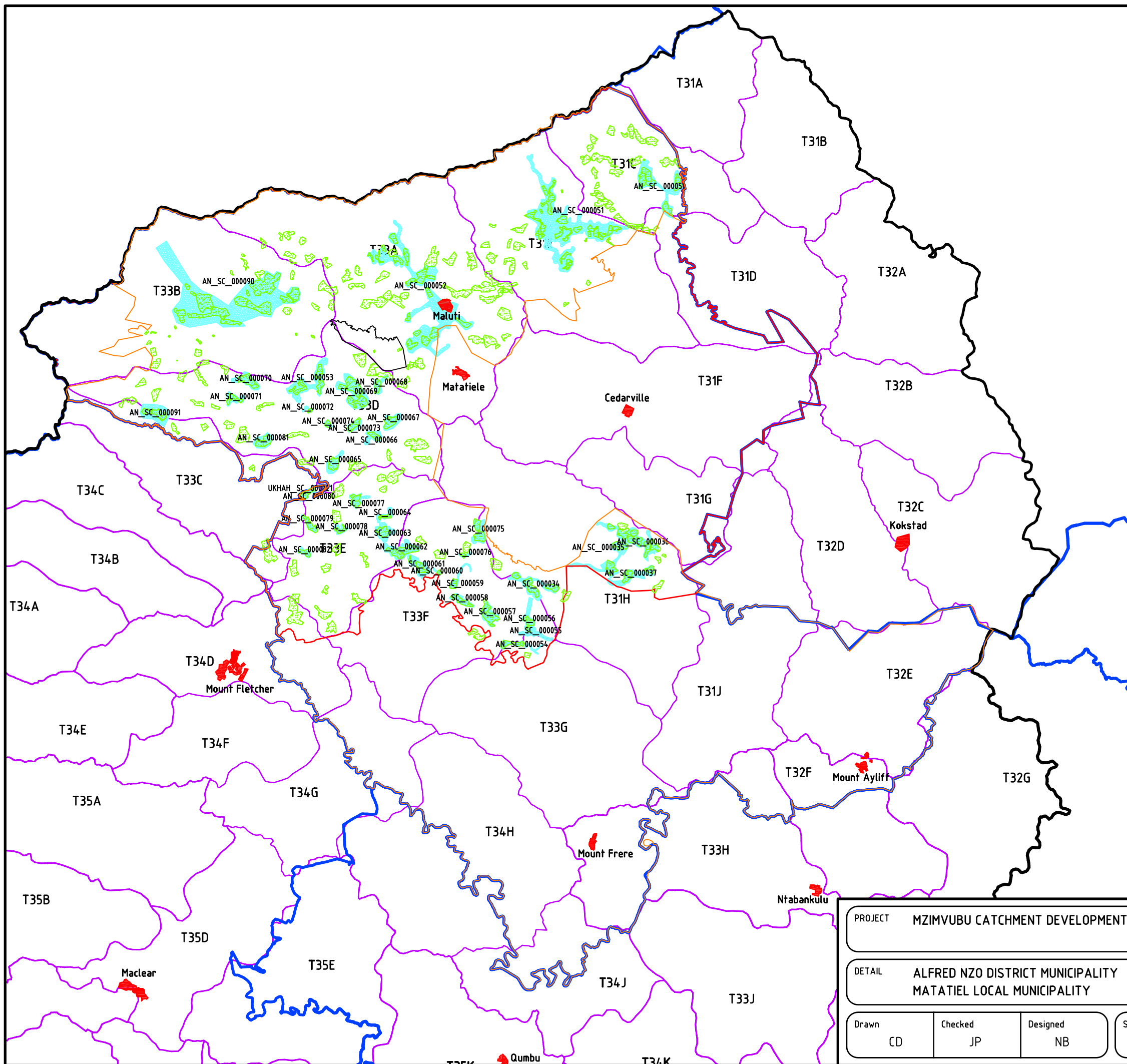
LEGEND

- DWAf GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT	MZIMVUBU CATCHMENT DEVELOPMENT STUDY		
DETAIL	ALFRED NZO DISTRICT MUNICIPALITY MZIMVUBU LOCAL MUNICIPALITY		
Drawn	Checked	Designed	Scale
CD	JP	NB	1:500 000
			Date
			AUG. 08



Project No.	Drg.No.	Rev.
E416	ANDM-1	0



MZIMVUBU CATCHMENT AREA

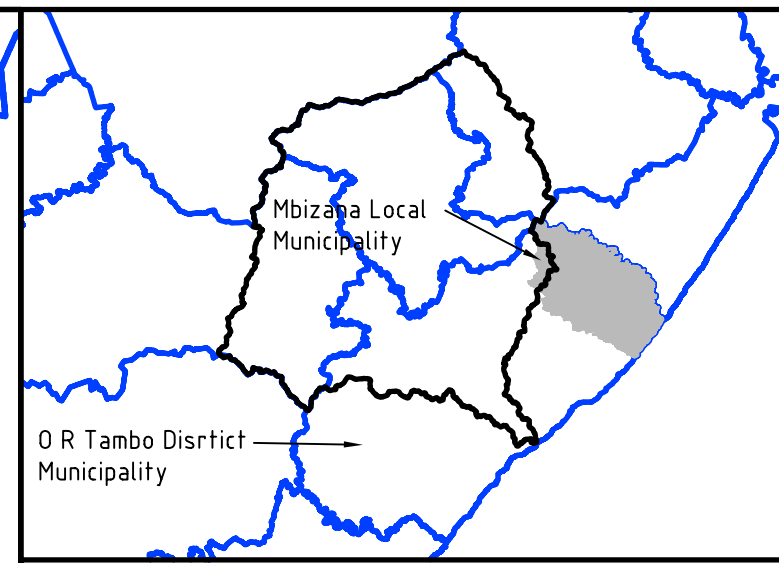
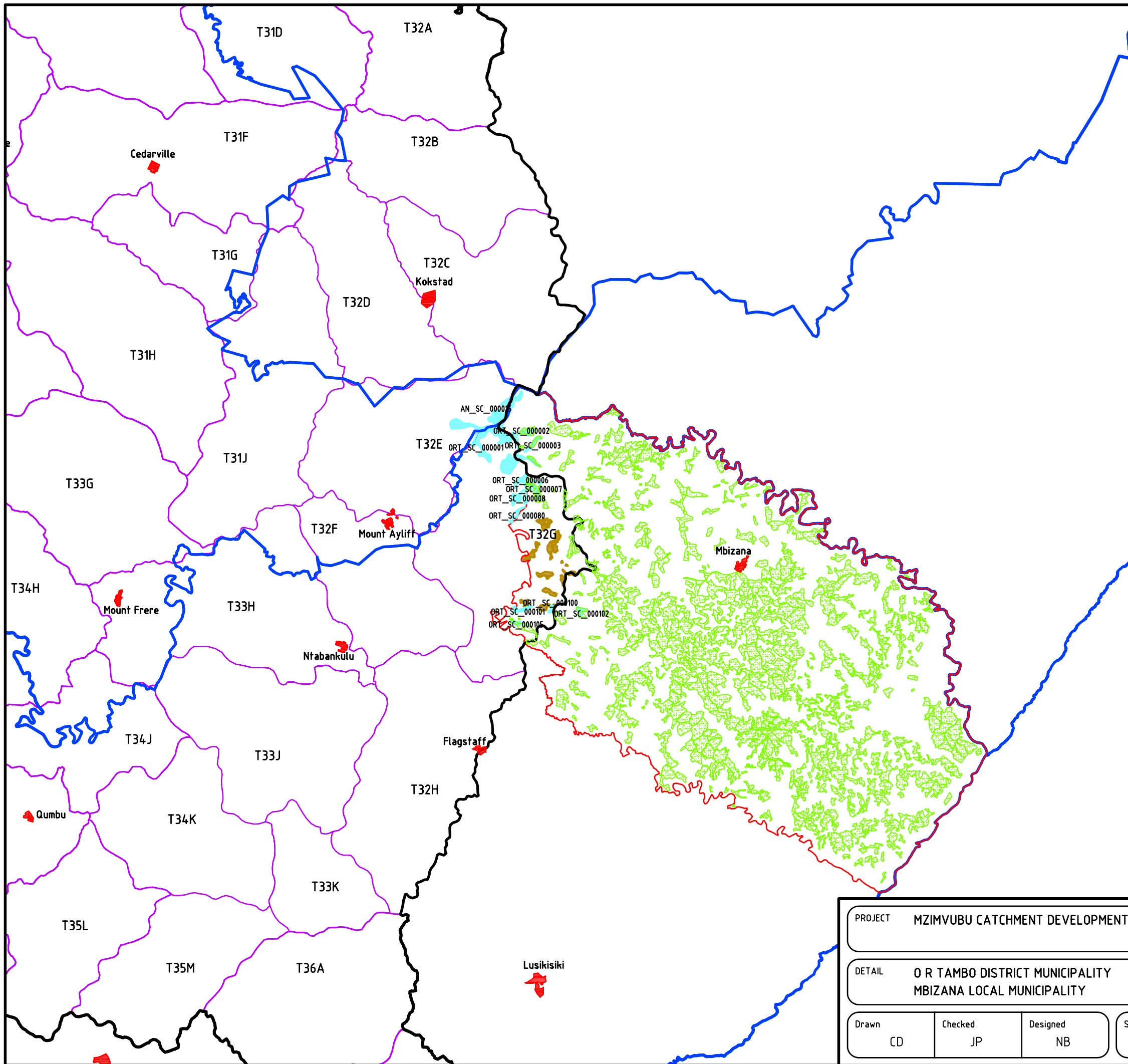
LEGEND

- DWAf GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label
- Former District Municipality Boundary - KZN Information Not Obtained

PROJECT		MZIMVUBU CATCHMENT DEVELOPMENT STUDY	
DETAIL		ALFRED NZO DISTRICT MUNICIPALITY MATATIEL LOCAL MUNICIPALITY	
Drawn	Checked	Designed	Scale
CD	JP	NB	1:500 000
Date		Date	
AUG. 08		AUG. 08	



Project No.	Drg.No.	Rev.
E416	ANDM-2	0



MZIMVUBU CATCHMENT AREA

LEGEND

- Villages With 50% Water Supply
- DWAf GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT MZIMVUBU CATCHMENT DEVELOPMENT STUDY

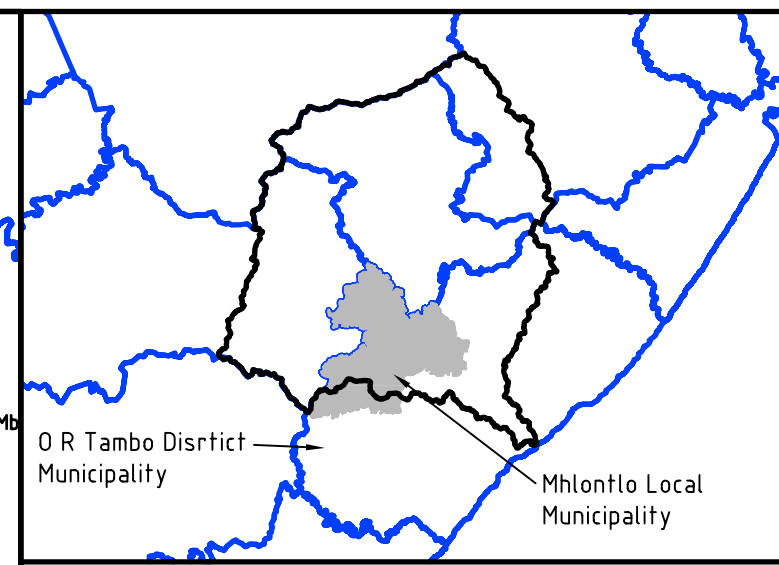
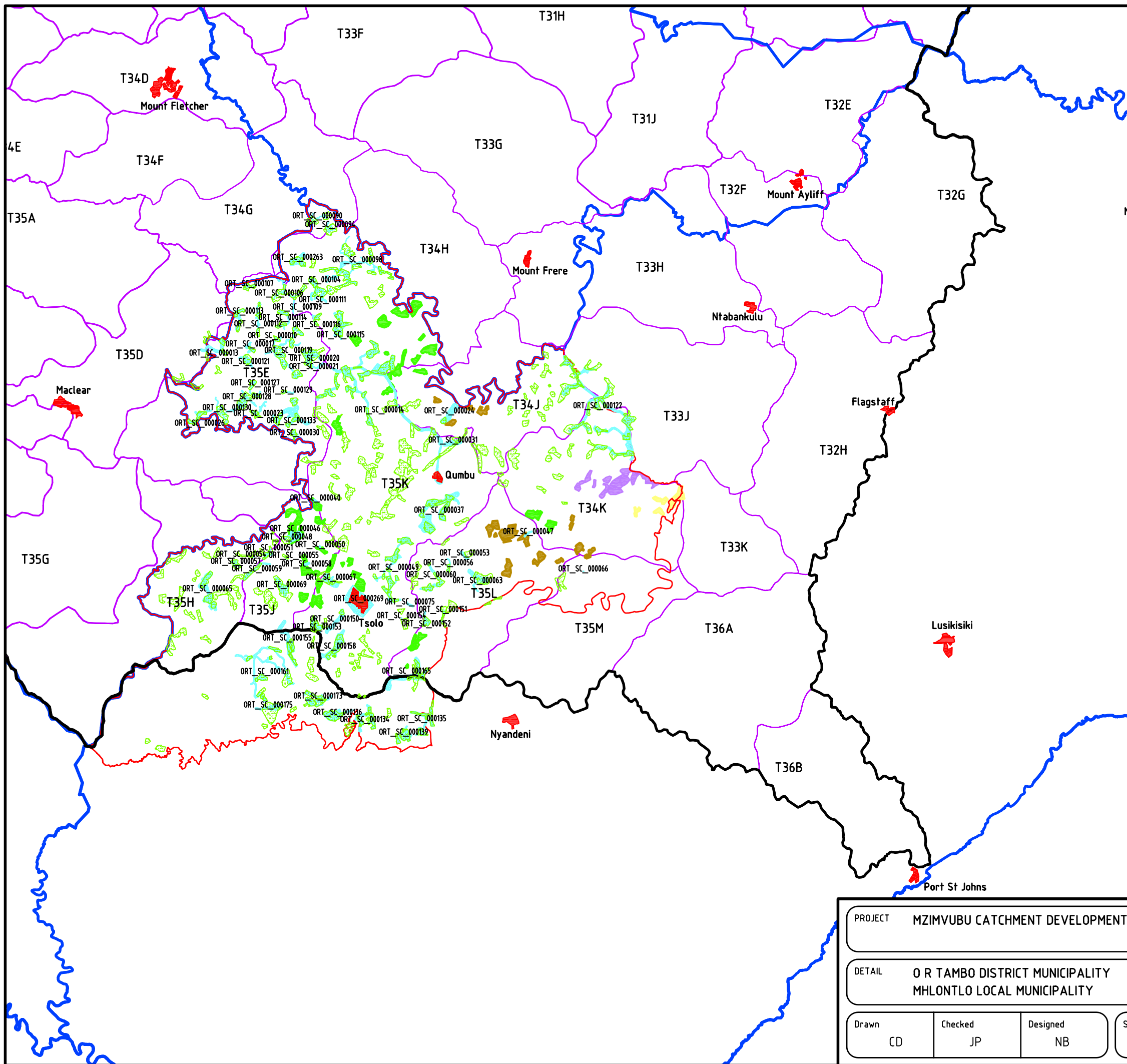
DETAIL O R TAMBO DISTRICT MUNICIPALITY
MBIZANA LOCAL MUNICIPALITY

Drawn CD	Checked JP	Designed NB
-------------	---------------	----------------

Scale 1:500 000	Date AUG. 08
--------------------	-----------------



Project No. E416	Drg.No. /ORTDM-1/	Rev. 0
---------------------	----------------------	-----------



MZIMVUBU CATCHMENT AREA

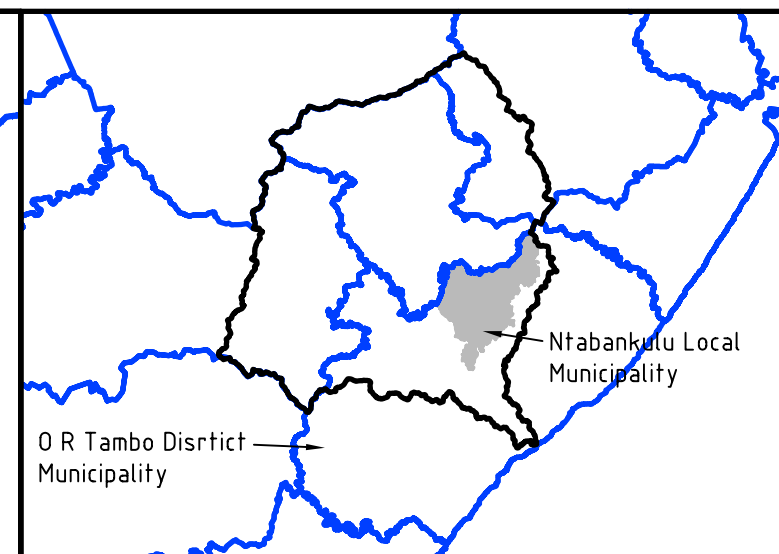
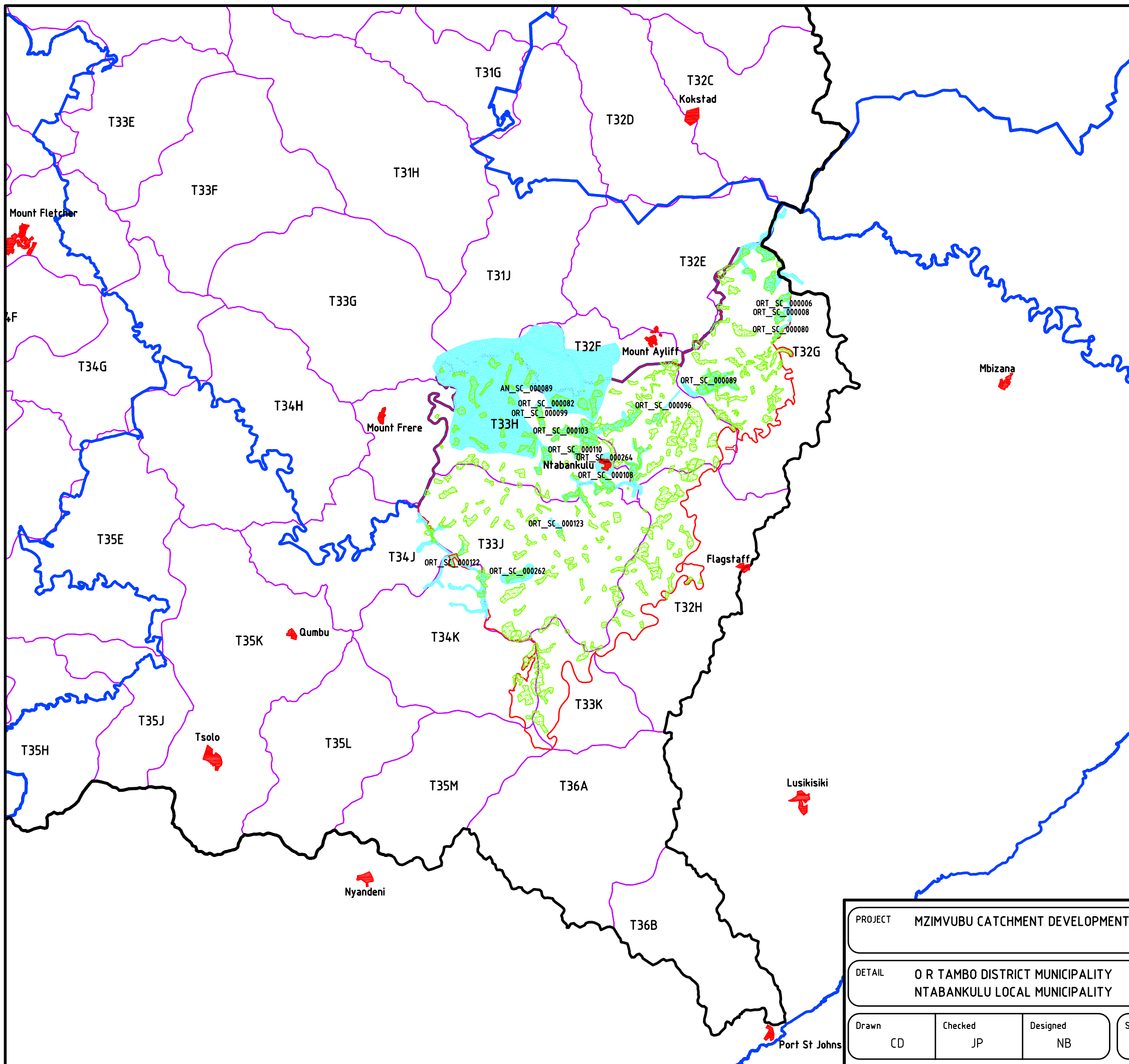
LEGEND

- Villages With 50% Water Supply
- Villages With 75% Water Supply
- Villages With 100% Water Supply
- Mangxamfu Water Supply Scheme
- DWAf GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT	MZIMVUBU CATCHMENT DEVELOPMENT STUDY		
DETAIL	O R TAMBO DISTRICT MUNICIPALITY MHLONTLO LOCAL MUNICIPALITY		
Drawn	Checked	Designed	Scale
CD	JP	NB	1:500 000
			Date
			AUG. 08



Project No.	Drg.No.	Rev.
E416	/ORTDM-2/	0



MZIMVUBU CATCHMENT AREA

LEGEND

- DWAF GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT MZIMVUBU CATCHMENT DEVELOPMENT STUDY

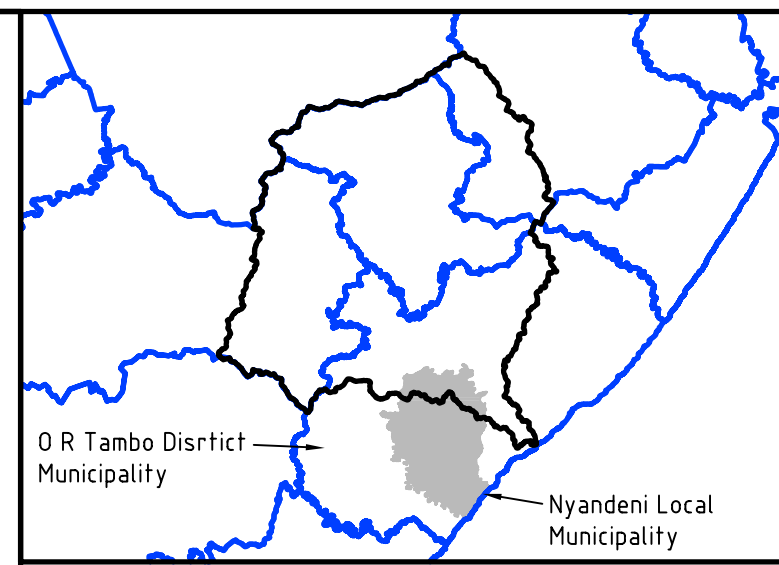
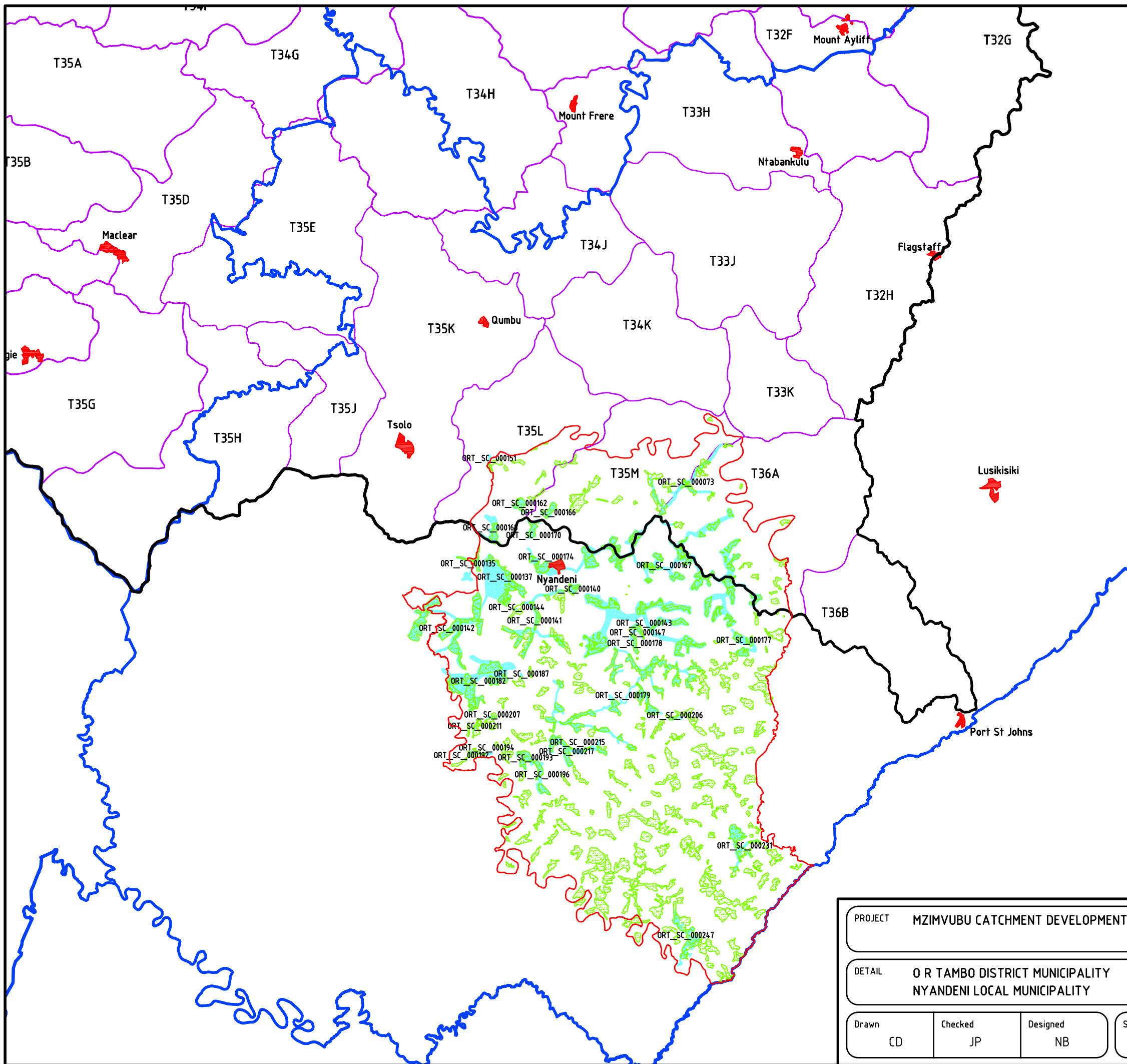
DETAIL O R TAMBO DISTRICT MUNICIPALITY
NTABANKULU LOCAL MUNICIPALITY

Drawn CD	Checked JP	Designed NB
-------------	---------------	----------------

Scale 1:500 000	Date AUG. 08
--------------------	-----------------



Project No. E416	Drg.No. /ORTDM-3/	Rev. 0
---------------------	----------------------	-----------



MZIMVUBU CATCHMENT AREA

LEGEND

- DWAf GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT MZIMVUBU CATCHMENT DEVELOPMENT STUDY

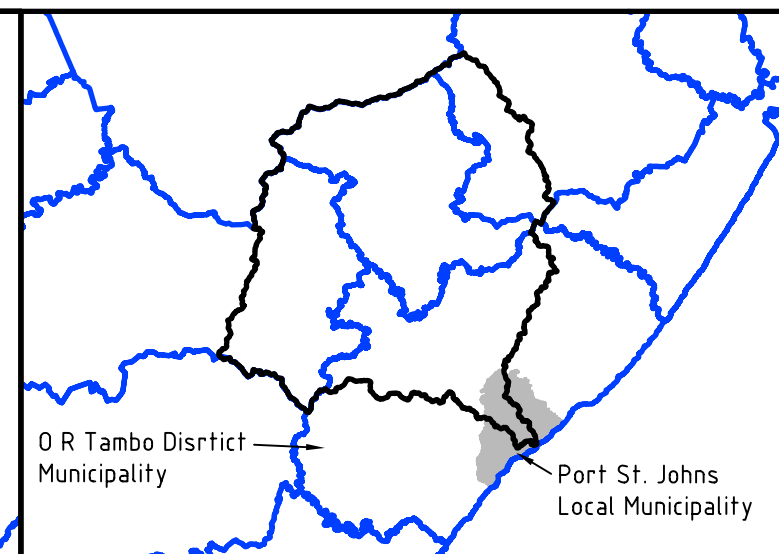
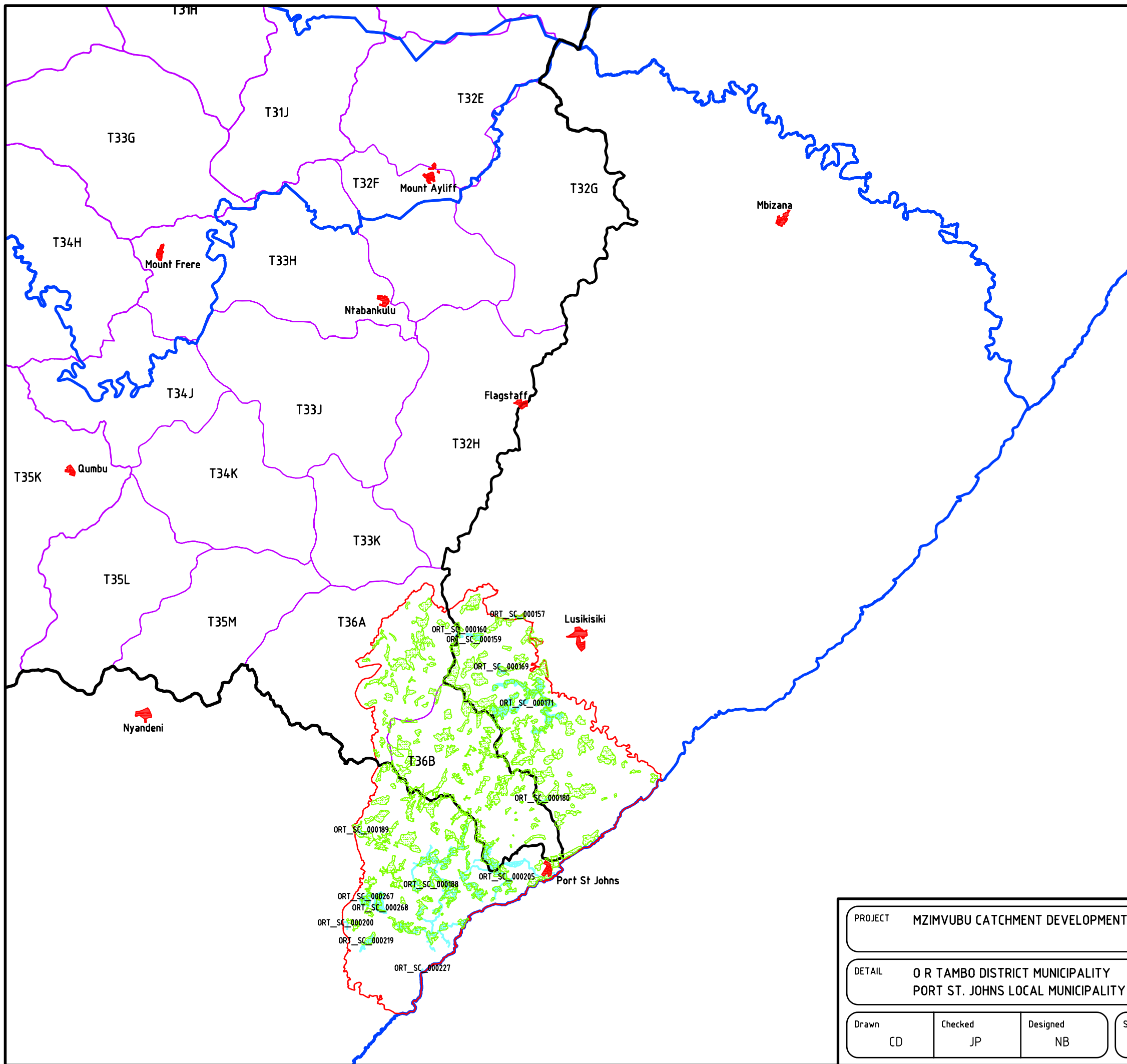
DETAIL O R TAMBO DISTRICT MUNICIPALITY
NYANDENI LOCAL MUNICIPALITY

Drawn CD	Checked JP	Designed NB
-------------	---------------	----------------

Scale 1:500 000	Date AUG. 08
--------------------	-----------------



Project No. E416	Drg.No. /ORTDM-4/	Rev. 0
---------------------	----------------------	-----------



MZIMVUBU CATCHMENT AREA

LEGEND

- DWAf GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT MZIMVUBU CATCHMENT DEVELOPMENT STUDY

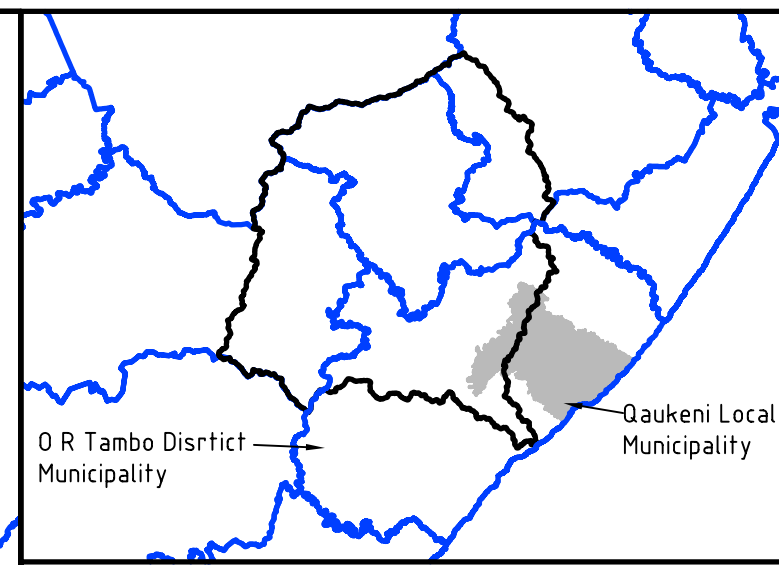
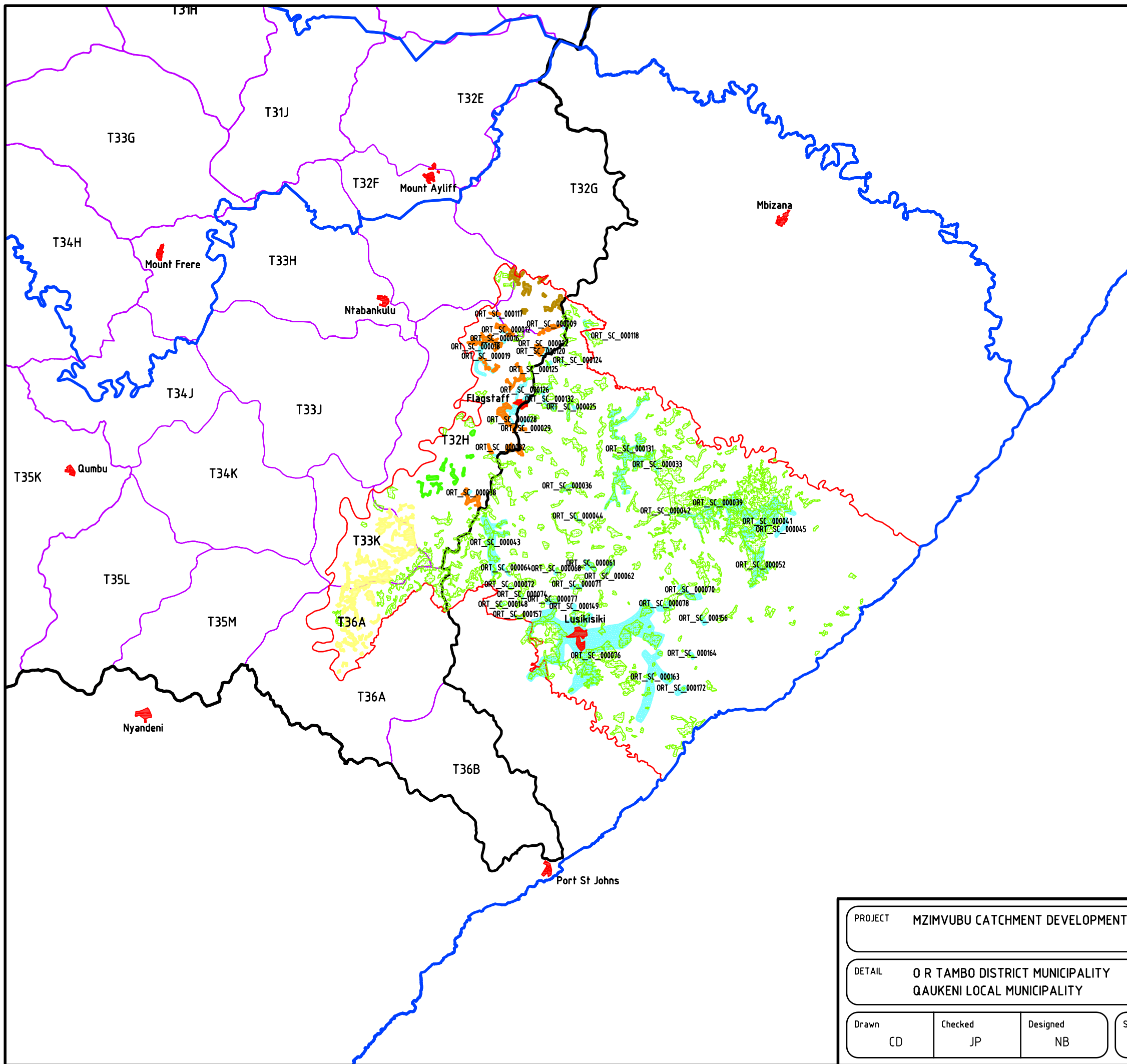
DETAIL O R TAMBO DISTRICT MUNICIPALITY
PORT ST. JOHNS LOCAL MUNICIPALITY

Drawn CD	Checked JP	Designed NB
-------------	---------------	----------------

Scale 1:500 000	Date AUG. 08
--------------------	-----------------



Project No. E416	Drg.No. /ORTDM-5/	Rev. 0
---------------------	----------------------	-----------



MZIMVUBU CATCHMENT AREA

LEGEND

- Villages With 50% Water Supply
- Villages With 75% Water Supply
- Villages With 100% Water Supply
- Flagstaff Regional Water Supply Scheme
- DWAF GIS Eastern Cape Water Supply Schemes
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT MZIMVUBU CATCHMENT DEVELOPMENT STUDY

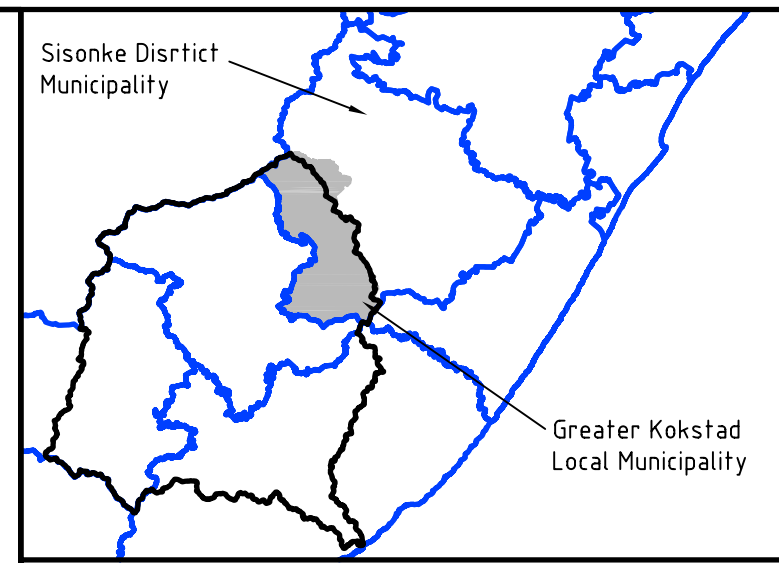
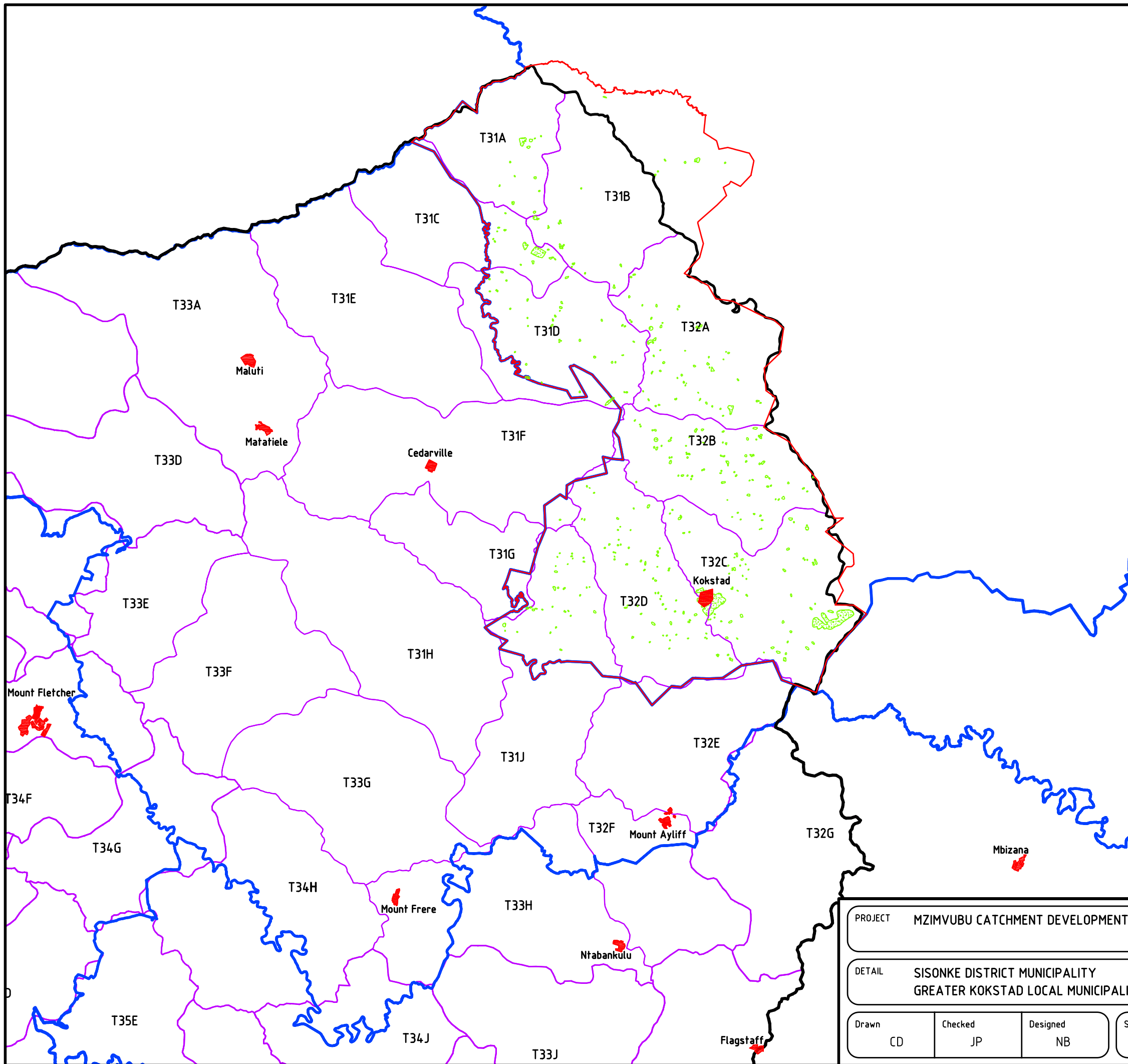
DETAIL O R TAMBO DISTRICT MUNICIPALITY
QAUKENI LOCAL MUNICIPALITY

Drawn CD	Checked JP	Designed NB
-------------	---------------	----------------

Scale 1:500 000	Date AUG. 08
--------------------	-----------------



Project No. E416	Drg.No. /ORTDM-6/	Rev. 0
---------------------	----------------------	-----------



MZIMVUBU CATCHMENT AREA

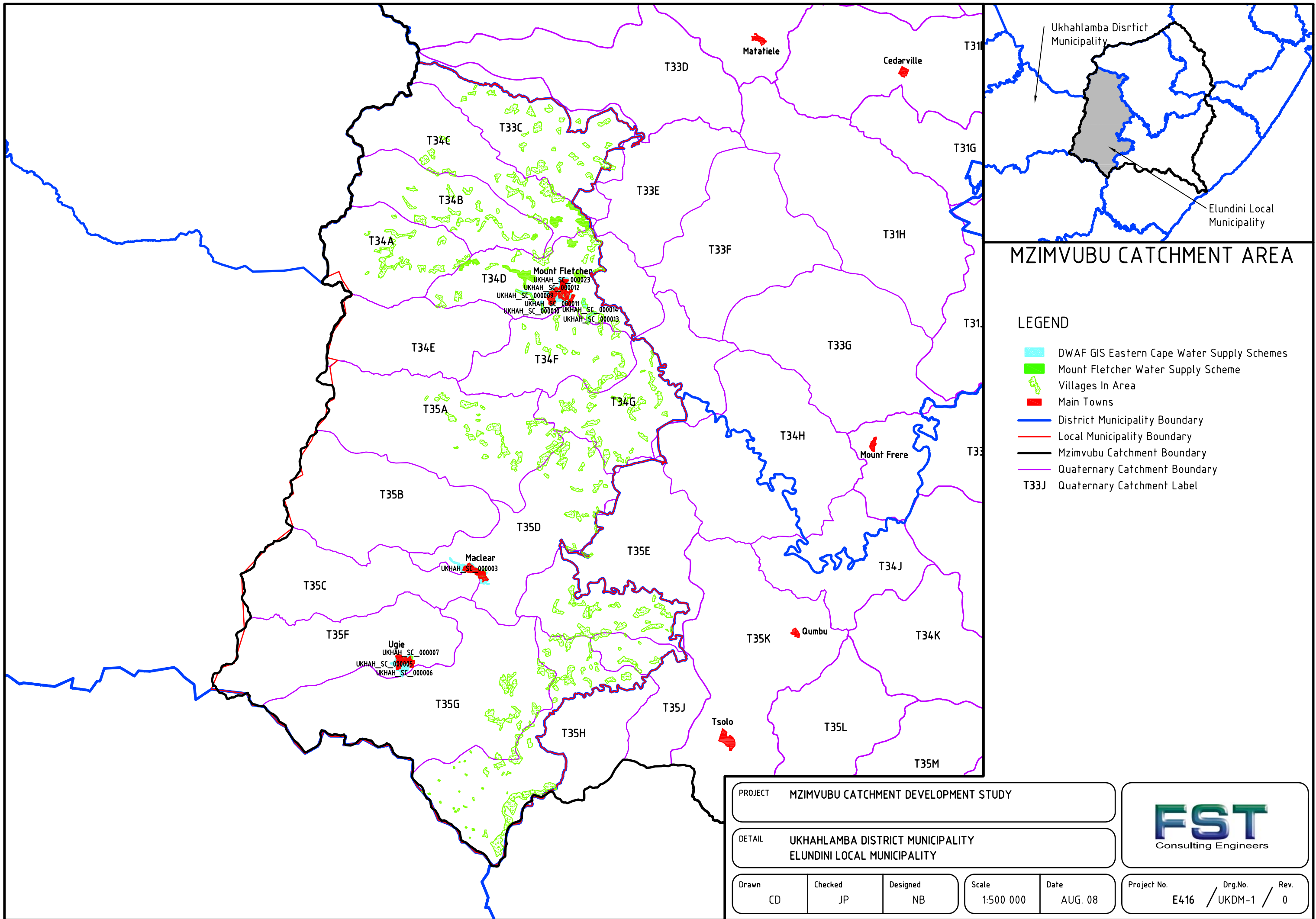
LEGEND

-  Villages In Area
-  Main Towns
-  District Municipality Boundary
-  Local Municipality Boundary
-  Mzimvubu Catchment Boundary
-  Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT		MZIMVUBU CATCHMENT DEVELOPMENT STUDY	
DETAIL		SISONKE DISTRICT MUNICIPALITY GREATER KOKSTAD LOCAL MUNICIPALITY	
Drawn	Checked	Designed	Scale
CD	JP	NB	1:500 000
			Date
			AUG. 08



Project No.	Drg.No.	Rev.
E416	SDM-1	0



MZIMVUBU CATCHMENT AREA

LEGEND

- DWAF GIS Eastern Cape Water Supply Schemes
- Mount Fletcher Water Supply Scheme
- Villages In Area
- Main Towns
- District Municipality Boundary
- Local Municipality Boundary
- Mzimvubu Catchment Boundary
- Quaternary Catchment Boundary
- T33J Quaternary Catchment Label

PROJECT		MZIMVUBU CATCHMENT DEVELOPMENT STUDY	
DETAIL		UKHAHLAMBA DISTRICT MUNICIPALITY ELUNDINI LOCAL MUNICIPALITY	
Drawn	Checked	Designed	Scale
CD	JP	NB	1:500 000
			Date
			AUG. 08



Project No.	Drg.No.	Rev.
E416	UKDM-1	0