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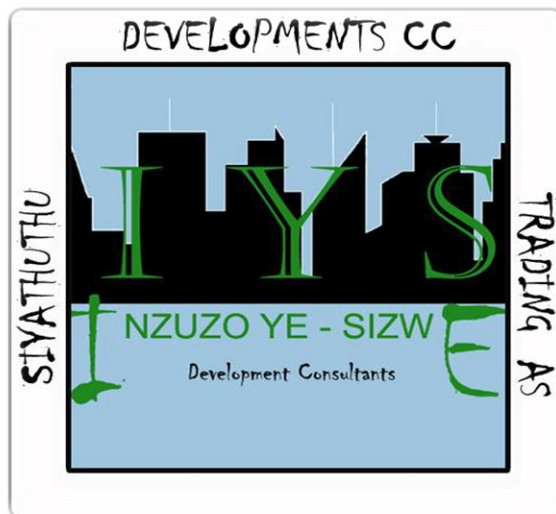
[2016/ 17 NONGOMA CAPITAL INVESTMENT FRAMEWORK (CIF): FINAL DRAFT]

[‘A CAPITAL INVESTMENT FRAMEWORK (CIF) IS A COMPONENT OF THE SPATIAL DEVELOPMENT FRAMEWORK (SDF) AS REQUIRED BY THE GUIDELINES ON THE PREPARATION OF SDFS’]

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**[NONGOMA LOCAL MUNICIPALITY: SPATIAL PLANNING AND ENVIRONMENT
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1. INTRODUCTION

1.1 BACKGROUND

A Capital Investment Framework (CIF) is considered to be a very important component of the Spatial Development Framework (SDF). CIF is a sound step towards a more systematic approach to infrastructure planning and coordination. This key goals of this component are as follows:

- ☛ Spatial budgeting – which involves mapping of the capital infrastructure projects that are approved by the IDP. This assists to determine whether the development trajectory that is advocated by the IDP is in harmony with the spatial development vision that is suggested by the SDF.
- ☛ Intensify spatial objectives with infrastructure proposals – the SDF identifies a number of spatial development proposals for further economic development and investments within the area but these proposals will be meaningless if the supporting infrastructure has not been planned for in tandem with the overall SDF. The CIF provides an opportunity to relook at these proposals in line with infrastructure requirements.

- ☛ Comparison of areas of greatest needs and where services or infrastructure proposals are directed to – this is intended to establish if the areas that encounters backlogs are receiving attention to address that. There are areas within the municipal area which suffers from historical and institutional neglect from benefiting from services. It is the role of a developmental government to be pro-active at developing these areas. This is part of the reconstruction and developmental mandate.

The normative aims and objectives are:

- ☛ To inform public and private sector investment decision-making.
- ☛ To influence municipal capital infrastructure project allocation.
- ☛ To serve as a strategic infrastructure guide for economic infrastructure priority areas.
- ☛ To map out all service delivery priority areas.
- ☛ To identify all major infrastructure priority areas including the projects currently underway.
- ☛ To determine if spatial proposal can be resourced by sufficient infrastructure resources.

- ☛ To integrate Capital Investment Framework with the IDP.
- ☛ Alignment of proposed housing projects with infrastructure requirements.

1.2 GENERALIZATION OF INFRASTRUCTURE CHALLENGES

Nongoma Local Municipality is geographically located within former KwaZulu homelands. This location triggers the generalization of the former homeland areas which were classified by a study titled Towards a Framework for the Classification of Development Nodes in KwaZulu-Natal: Regional Spatial Restructuring For An Efficient Delivery Of Services as mostly *“densely populated rural areas with the historical legacy of underdeveloped and unplanned rural settlements characterised by huge service backlogs, poor access to public facilities, amenities, poor road access, lack of employment opportunities and marginal agricultural production potential. These areas are grossly underdeveloped compared to the former Natal part of the province”*. (CoGTA: 2015, p43)

Nongoma is indeed a rural municipality with vast challenges in terms of infrastructure due to the historical neglect by the apartheid regime. This neglect resulted in massive infrastructure backlogs (roads, water, sanitation, electricity, housing, health, education, telecommunications etc.), underdevelopment,

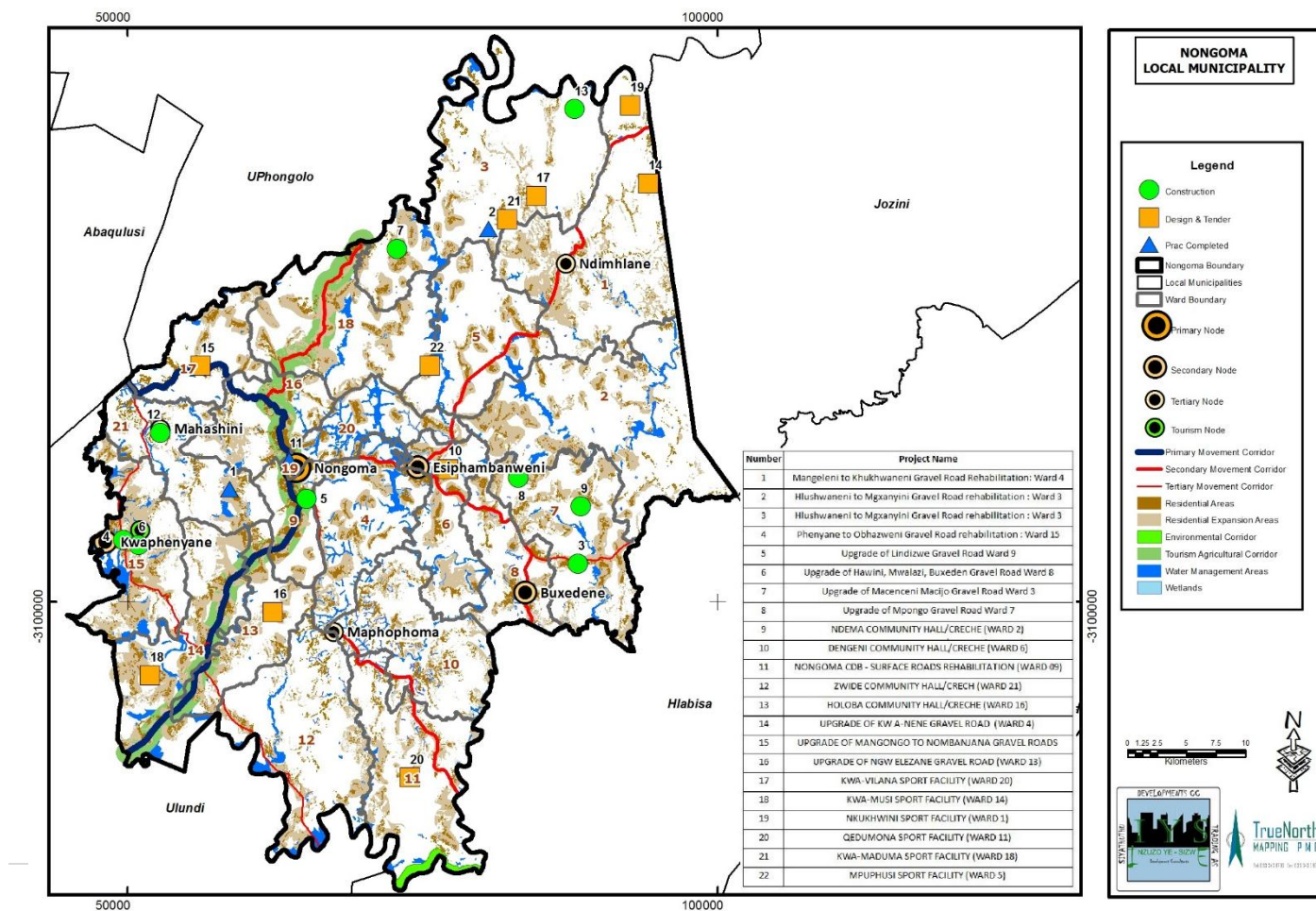
unsustainable local economies and entrenched systems of patronage. Since democratisation in 1994, the Government has put in place a number of key programmes which impact on rural development. These include programmes in the areas of infrastructure development. In some cases, programmes have struggled to fully respond to the challenges in the face of the dire need for service delivery in rural areas. In other cases, service delivery has been frustrated by insufficient integration and co-ordination across government departments and between different tiers of government (national, provincial and local) and the lack of institutional readiness to implement such programmes. The reasons for this are complex, and relate in part to the absence of clear strategic planning frameworks and consensus amongst service delivery agencies.

Nongoma acknowledges that, when infrastructure investment and economic development is undertaken in a vacuum, this causes a fragmented situation which does not achieve viable economic growth and productivity of the sub-region. There are economic opportunities and socio-economic needs which can be unlocked by infrastructure development as suggested by the IDP and LED plans of Nongoma Local Municipality. The proposed plan must go beyond the obvious such that it must be practical in the identification of

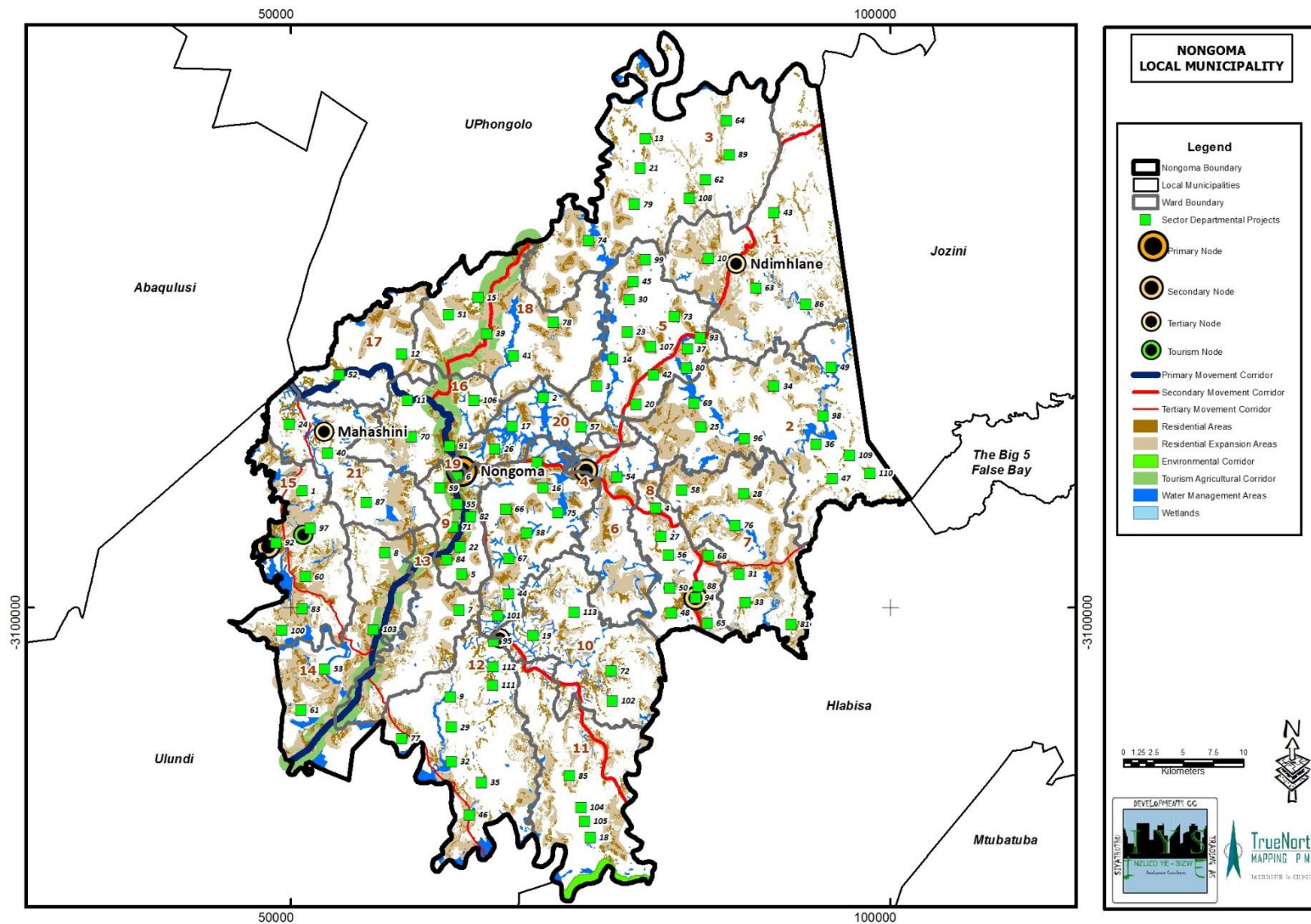
challenges and enablers that can build a solid foundation for infrastructure development within Nongoma Municipal Area.

2. SPATIAL BUDGETING

2.1 IDP CAPITAL PROJECTS



The projects that are funded through Municipal Infrastructure Grant (MIG) amounts to approximately R93 682 985.50 per annum. These mainly include the road infrastructure upgrade which are identified within various parts of Nongoma Municipal Area as well as the two Sportsfield in Mpuphuzi and KwaMaduma. Most of the MIG projects are located within the SDF priority nodes which are Nongoma Town, Buxeden, Lindizwe and Shoprite Link Road. The other projects that are located outside of SDF priority areas are Bhuqwini, Matshamhlophe and KwaVilana, Qedumona.



| No. | Department | Name | Budget | No. | Department | Name | Budget |
|-----|--------------------|----------------------------------|-------------|-----|--------------------|--------------------------------|-------------|
| 1 | Social Development | Amazing Grace Adult-Child Centre | R204 908.00 | 33 | Social Development | Mphola Biodiesel | R689 507.32 |
| 2 | Social Development | Bambelentulo Creche | R114 048.00 | 34 | Social Development | Mpucukweni Creche | R130 944.00 |
| 3 | Social Development | Buhlebethu Creche | R190 080.00 | 35 | Social Development | Mpumalanga Creche | R157 080.00 |
| 4 | Social Development | Buhlebuyeza Creche | R186 120.00 | 36 | Social Development | Msasaneni Creche | R147 840.00 |
| 5 | Social Development | Cathulani Creche | R329 472.00 | 37 | Social Development | Msebe Community Centre | R477 723.00 |
| 6 | Social Development | Egugwini Creche | R257 664.00 | 38 | Social Development | Mseni Creche | R118 272.00 |
| 7 | Social Development | Ekubuseni Community | R389 420.00 | 39 | Social Development | Muzibulawa Creche | R253 440.00 |
| 8 | Social Development | Ekuthuleni Creche | R157 080.00 | 40 | Social Development | Nikithemba Project | R204 908.00 |
| 9 | Social Development | Fundekhaya Creche | R198 528.00 | 41 | Social Development | Njabulo Creche | R143 616.00 |
| 10 | Social Development | Funulwazi Creche | R126 720.00 | 42 | Social Development | Njoko Creche | R249 480.00 |
| 11 | Social Development | Gagangezandla Creche | R130 944.00 | 43 | Social Development | Nkanyeziyokusa Creche | R143 616.00 |
| 12 | Social Development | Halalisani Creche | R97 152.00 | 44 | Social Development | Nkosinathi Creche | R304 128.00 |
| 13 | Social Development | Hlokomani Creche | R97 152.00 | 45 | Social Development | Nkosiyabantwana Creche | R146 520.00 |
| 14 | Social Development | Ikusasaletu Creche | R168 960.00 | 46 | Social Development | Nqobuzulu Creche | R126 720.00 |
| 15 | Social Development | Incathu Development | R126 720.00 | 47 | Social Development | Othandweni Creche | R179 520.00 |
| 16 | Social Development | Isibnisezwe Creche | R109 824.00 | 48 | Social Development | Phaphamani Creche | R198 000.00 |
| 17 | Social Development | Isizamile Creche | R88 704.00 | 49 | Social Development | Sakhulwazi Creche | R105 600.00 |
| 18 | Social Development | Isiwesethu Creche | R157 080.00 | 50 | Social Development | Samukelmusa Creche | R152 064.00 |
| 19 | Social Development | Khayalempilo Creche | R170 544.00 | 51 | Social Development | Sibahle Creche | R181 632.00 |
| 20 | Social Development | Khethankomo Creche | R105 600.00 | 52 | Social Development | Sibongamandla Community Centre | R76 032.00 |
| 21 | Social Development | Khulisabantwana Creche | R126 720.00 | 53 | Social Development | Sikulangemfundo Creche | R92 928.00 |
| 22 | Social Development | Kwafunulwazi Creche | R211 200.00 | 54 | Social Development | Silindokuhle Creche | R401 280.00 |
| 23 | Social Development | Lethukukhanya Creche | R278 784.00 | 55 | Social Development | Sincengimpilo Creche | R143 616.00 |

| No. | Department | Name | Budget | No. | Department | Name | Budget |
|-----|--------------------|---|---------------|-----|--------------------|-------------------------|---------------|
| 24 | Social Development | Mahhashini Creche | R135 168.00 | 56 | Social Development | Sinethemba Creche | R67 320.00 |
| 25 | Social Development | Masakhane Creche | R225 720.00 | 57 | Social Development | Sithokozile Creche | R232 320.00 |
| 26 | Social Development | Masazane Creche | R388 608.00 | 58 | Social Development | Siyajabula Creche | R135 168.00 |
| 27 | Social Development | Masiqhubeke Creche | R181 632.00 | 59 | Social Development | Siyakhula Creche | R166 056.00 |
| 28 | Social Development | Masivakashe Creche | R147 840.00 | 60 | Social Development | Siyathuthuka Creche | R211 200.00 |
| 29 | Social Development | Matheni Siyazama | R59 400.00 | 61 | Social Development | Siyathuthuka Nsimbini | R94 248.00 |
| 30 | Social Development | Mavela Block Making | R500 000.00 | 62 | Social Development | Siyezama Creche | R105 600.00 |
| 31 | Social Development | Mbonomuhle Community Centre | R510 932.00 | 63 | Social Development | Sikhulasonke Creche | R105 600.00 |
| 32 | Social Development | Mgashane Creche | R412 896.00 | 64 | Social Development | Sozama Creche | R130 944.00 |
| 65 | Social Development | Sukumani Creche | R116 688.00 | 76 | Social Development | Sukuma Workshop | R78 078.00 |
| 66 | Social Development | Thembela Creche | R118 272.00 | 77 | Social Development | Kwaphumulefile Club | R38 888.00 |
| 67 | Social Development | Thuthukani Creche | R215 424.00 | 78 | Social Development | Thembaletu | R77 220.00 |
| 68 | Social Development | Vukukhanyise Creche | R223 872.00 | 79 | Social Development | Siyazama Club | R27 000.00 |
| 69 | Social Development | Vukuzenzele Creche | R130 680.00 | 80 | Social Development | Ndimhlane Club | R81 180.00 |
| 70 | Social Development | Vulinqondo Creche | R152 064.00 | 81 | Social Development | Izinqunqulu Club | R109 296.00 |
| 71 | Social Development | Wisdom Gate Creche | R130 944.00 | 82 | Social Development | Nzalabantu Club | R32 400.00 |
| 72 | Social Development | Zakhele Creche | R152 592.00 | 83 | Social Development | Sibonwayinkosi Club | R58 344.00 |
| 73 | Social Development | Zamokuhle Creche | R291 720.00 | 84 | Agriculture | Ngethule | R199 450.00 |
| 74 | Social Development | Zihlakaniphele Creche | R198 528.00 | 85 | Agriculture | Impumelelo | R805 000.00 |
| 75 | Social Development | Zwelisha Creche | R139 392.00 | 86 | Agriculture | Ngunza | |
| 87 | Agriculture | Mkhephu | R15 500.00 | 97 | Transport | Mankulumane Access Road | R300 000.00 |
| 88 | Agriculture | Myulazi | R113 500.00 | 98 | Transport | Nkweme Road | R1 450 000.00 |
| 89 | Agriculture | Emaqhineni | R26 000.00 | 99 | Transport | Ncogoma Road | R750 000.00 |
| 90 | Agriculture | Injampela | R98 000.00 | 100 | Transport | Isdudana Causeway | R1 550 000.00 |
| 91 | Health | Accommodation, Fencing, Roofing, Piping | | 101 | Transport | D1899 | R3 800 000.00 |
| 92 | Health | Usuthu Clinic | | 102 | Transport | D1901 | R2 500 000.00 |
| 93 | Health | Njoko Clinic Ablutions | | 103 | Transport | D2300 | R1 450 000.00 |
| 94 | Health | Buxedene Clinic Ablutions | | 104 | Transport | A3262 Contract 1 | R1 500 000.00 |
| 95 | Health | Maphophoma Clinic | | 105 | Transport | A3262 Contract 2 | R1 250 000.00 |
| 96 | Transport | Indabekhulunywayo Access Road | R500 000.00 | 106 | Transport | D1924 | R2 350 000.00 |
| 107 | Transport | L534 | R1 400 000.00 | 111 | Transport | D2409 Contract 1 | R1 600 000.00 |

| No. | Department | Name | Budget | No. | Department | Name | Budget |
|-----|------------|------------------|---------------|-----|------------|------------------|---------------|
| 108 | Transport | D1816 | R2 300 000.00 | 112 | Transport | D2409 Contract 2 | R1 650 000.00 |
| 109 | Transport | D1806 Contract 1 | R1 450 000.00 | 113 | Transport | D1915 | R1 300 000.00 |
| 110 | Transport | D1806 Contract 2 | R1 450 000.00 | | | | |

There are a number of projects that have been proposed by Sector Departments such as Social Development, Health, Transport and Agriculture. The total budget for these amounts to R 44 838 574.32. The majority of these are social projects and public facilities which

are located within the rural settlements. The infrastructure projects such as the roads are mainly proposed within the settlement areas which are not classified as priority investment points.

2.3 PUBLIC FACILITIES

2.3.1 PLANNING STANDARDS ON PUBLIC FACILITIES

The standards that should be used for the provision of schools must take into account the Department of Education's *Regulations relating to Minimum Norms and Standards for Public Infrastructure (2013, p8-11)*.

| CATEGORY | TYPE OF SCHOOL | DENSITY REQUIREMENTS | SERVICE THRESHOLD |
|-------------------|--|--|-------------------|
| Primary schools | Micro primary schools (less than 135 learners) | 60 Households or 300 people | 1,5 km |
| | Small primary schools, (135 - 310 learners) | 150 Households or 750 people | 1,5 km |
| | Medium primary schools (311 - 620 learners) | 300 Households or 1500 people | 1,5 km |
| | Large primary schools (621 - 930 learners) | 400 Households or 2000 people | 1,5 km |
| | Mega primary schools (more than 931 learners). | 600 Households or 3000 people ¹ | 1,5 km |
| Secondary schools | Small secondary schools (200 - 400 learners) | 200 Households or 2000 people | 2 km |
| | Medium secondary schools, (401 – 600 learners) | 560 Households or 4500 people | 2 km |
| | Large secondary schools (601 - 1000 learners) | 960 Households or 8000 people | 2 km |
| | Mega secondary schools (more than 1001 learners) | 1 200 Households or 10 000 people ² | 2 km |

The planning standards for Health Facilities are as follows:

| TYPE OF FACILITY | CAPACITY | DENSITY REQUIREMENTS | SERVICE THRESHOLD |
|-----------------------------|---|---|-------------------|
| Mobile Point | 100 patients per month | 300 Households or 1 000 people | 1km |
| Health Station | 400 – 600 patients per month | 560 Households or 5 000 people | 3km |
| Small Clinic | 2000 patients per month | 1 200 Households or 5 000 – 10 000 people | 5km |
| Small Clinic with Maternity | 2000 patients per month + 20 deliveries per | 1 200 Households or 5 000 – 10 000 people | 5km |

¹ KwaZulu-Natal Planning and Development Commission. (2008). Guidelines for Planning of Facilities in KwaZulu-Natal

² KwaZulu-Natal Planning and Development Commission. (2008). Guidelines for Planning of Facilities in KwaZulu-Natal

| TYPE OF FACILITY | CAPACITY | DENSITY REQUIREMENTS | SERVICE THRESHOLD |
|-----------------------------------|--|--|--|
| | month | | |
| Medium Clinic | 3000 patients per month | 2 500 Households or 10 000 – 20 000 people | 5km |
| Medium Clinic with Maternity | 3000 patients per month+ 20 deliveries per month | 2 500 Households or 10 000 – 20 000 people | 5km |
| Large Clinic | 4000 – 5000 patients per month | 7 500 Households or 30 000 – 50 000 people | 5km |
| Large Clinic with Maternity | 4000 – 5000 patients per month + 30-50 deliveries per month | 7 500 Households or 30 000 – 50 000 people | 5km |
| Extra Large Clinic | 6000 – 10 000 patients per month | 15 000 Households or 60 000 – 70 000 people | 7km |
| Extra Large Clinic with Maternity | 6000 – 10 000 patients per month + 30-50 deliveries per month | 15 000 Households or 60 000 – 70 000 people | 7km |
| Community Health Centre | 10 000 patients per month | 25 000 Households or 70 000 – 100 000 people | 10km |
| District Hospital | 10 000 – 80 000 patients per month | 50 000 Households or 100 000 – 250 000 people | |
| Regional Hospital | Provides for up to Group 2 of specialists services including Cardiology, Neurosurgery and Renal Transplant | Specialized Services. Depend on the need. | Specialized Services. Depend on the need. |
| Tertiary Hospital | Provides for up to Group 3 of specialists services including Liver Transplant and Hepatology. | Highly Specialized Services. Depends on the need | Highly Specialized Services. Depends on the need |

The planning standards for other facilities are as follows:

| TYPE OF FACILITY | CAPACITY | DENSITY REQUIREMENTS | SERVICE THRESHOLD |
|-------------------|---|--------------------------------|-------------------|
| Crèche | 300 m ² (including minimum play area of 20 – 30 m ²) | 5000 people or 1000 homesteads | Undetermined |
| Community Hall | 2 000 – 3 000m ² | 5000 people or 1000 homesteads | Undetermined |
| Playlot | 0,5ha | 230 – 800 people | 0,5km |
| Playground | 2ha | 2000 – 5000 people | 1,2km |
| Neighborhood Park | 2ha | Up to 6000 people | 0,4km |
| Community Park | 8ha | 50 000 – 20 000 people | 3,6km |

| TYPE OF FACILITY | CAPACITY | DENSITY REQUIREMENTS | SERVICE THRESHOLD |
|------------------|----------|----------------------|-------------------|
| Major Park | 40ha | 50 000 people | 60km |

KZN Planning and Development Commission (2008)

2.3.2 EXISTING AND REQUIRED

The quantification of public facilities and an application of the planning standards was done with an intention to determine if the wards were adequately provided with facilities. Generally there are 387 public facilities that are found within the area of Nongoma which includes Clinics, Crèches, Schools and Community Halls. The planning standards suggests that there are 277 facilities that are needed to service the existing population which implies that are a municipal wide scale, there are sufficient facilities for the population. However, when one considers the distribution of these

facilities within wards, it becomes apparent that some of the wards are provided with more facilities that the standards warrant while other wards are underprovided. This creates a backlog of 50 additional facilities within the wards that are underprovided. The proposed sector departmental projects aim to provide 62 additional facilities; however, these facilities are not aligned with the planning standards (i.e. not addressing the backlogs). The table below is a color notation which reflect per ward the backlogs (red) and adequate number of facilities (green).

| Ward | Number of Households | Facility | Current | Backlogs | | Current Projects |
|------|----------------------|----------------|---------|---|-------------------------------|------------------|
| | | | | Type of Facility Required | Number of Facilities Required | |
| 1 | 1708 | Clinic | 0 | Small Clinic with Maternity Facility and Health Station (2) | 2 | 0 |
| | | Crèche | 6 | 2 crèches | 0 | 3 |
| | | Primary School | 9 | 6 Medium Primary Schools | 0 | |
| | | High School | 9 | 3 Medium Secondary Schools | 0 | |
| | | Hall | 2 | 2 Community Hall | 0 | |
| 2 | 1634 | Clinic | 1 | Small Clinic with Maternity Facility and Health Station (2) | 1 | |
| | | Crèche | 13 | 2 crèches | 0 | 6 |
| | | Primary School | 9 | 6 Medium Primary Schools | 0 | |
| | | High School | 3 | 3 Medium Secondary Schools | 0 | |

| Ward | Number of Households | Facility | Current | Backlogs | | Current Projects |
|------|----------------------|----------------|---------|---|-------------------------------|------------------|
| | | | | Type of Facility Required | Number of Facilities Required | |
| | | Hall | 2 | 2 Community Hall | 0 | |
| 3 | 1773 | Clinic | 1 | Small Clinic with Maternity Facility and Health Station (2) | 1 | |
| | | Crèche | 20 | 1 crèche | 0 | 5 |
| | | Primary School | 10 | 6 Medium Primary Schools | 0 | |
| | | High School | 3 | 3 Medium Secondary Schools | 0 | |
| | | Hall | 2 | 2 Community Hall | 0 | |
| | | | | | | |
| 4 | | Clinic | 1 | Medium Clinic with Maternity Facility (1) | 0 | |
| | | Crèche | 7 | 2 crèches | 0 | 6 |
| | | Primary School | 9 | 7 Medium Primary Schools | 0 | |
| | | High School | 2 | 4 Medium Secondary Schools | 2 | |
| | | Hall | 2 | 2 Community Hall | 0 | |
| 5 | 1610 | Clinic | 1 | Small Clinic with Maternity Facility and Health Station (2) | 1 | |
| | | Crèche | 5 | 2 crèches | 0 | 7 |
| | | Primary School | 7 | 5 Medium Primary Schools | 0 | |
| | | High School | 3 | 3 Medium Secondary Schools | 0 | |
| | | Hall | 1 | 2 Community Hall | 1 | |
| 6 | | Clinic | 1 | Small Clinic with Maternity (1) | 0 | |
| | | Crèche | 5 | 1 crèche | 4 | 1 |
| | | Primary School | 3 | 4 Medium Primary Schools | 1 | |
| | | High School | 2 | 3 Medium Secondary Schools | 1 | |
| | | Hall | 2 | 1 Community Hall | 1 | |
| 7 | 1688 | Clinic | 0 | Small Clinic with Maternity Facility and Health Station (2) | 2 | |
| | | Crèche | 13 | 2 crèches | 0 | 2 |
| | | Primary School | 5 | 5 Medium Primary Schools | 0 | |

| Ward | Number of Households | Facility | Current | Backlogs | | Current Projects |
|------|----------------------|----------------|---------|---|-------------------------------|------------------|
| | | | | Type of Facility Required | Number of Facilities Required | |
| 8 | 1572 | High School | 2 | 3 Medium Secondary Schools | 1 | |
| | | Hall | 1 | 2 Community Hall | 1 | |
| | | Clinic | 1 | Small Clinic with Maternity Facility and Mobile Point (2) | 1 | |
| | | Crèche | 4 | 2 crèches | 2 | 6 |
| | | Primary School | 6 | 6 Medium Primary Schools | 0 | |
| | | High School | 3 | 3 Medium Secondary Schools | 0 | |
| | | Hall | 1 | 2 Community Hall | 1 | |
| 9 | 2932 | Clinic | 0 | Medium Clinic with Maternity Facility | 1 | |
| | | Crèche | 1 | 3 crèches | 2 | 5 |
| | | Primary School | 4 | 9 Medium Primary Schools | 5 | |
| | | High School | 4 | 4 Medium Secondary Schools | 0 | |
| | | Hall | 1 | 3 Community Hall | 2 | |
| 10 | 1503 | Clinic | 1 | Small Clinic with Maternity Facility and Mobile Point (2) | 1 | |
| | | Crèche | 6 | 2 crèches | 0 | 1 |
| | | Primary School | 6 | 5 Medium Primary Schools | 0 | |
| | | High School | 3 | 3 Medium Secondary Schools | 0 | |
| | | Hall | 2 | 2 Community Hall | 0 | |
| 11 | 1621 | Clinic | 1 | Small Clinic with Maternity Facility and Mobile Point (2) | 1 | |
| | | Crèche | 7 | 2 crèches | 0 | 1 |
| | | Primary School | 5 | 5 Medium Primary Schools | 0 | |
| | | High School | 2 | 3 Medium Secondary Schools | 1 | |
| | | Hall | 2 | 2 Community Hall | 0 | |
| 12 | 1649 | Clinic | 2 | Small Clinic with Maternity Facility and Mobile Point (2) | 2 | |

| Ward | Number of Households | Facility | Current | Backlogs | | Current Projects |
|------|----------------------|----------------|---------|--|-------------------------------|------------------|
| | | | | Type of Facility Required | Number of Facilities Required | |
| | | Crèche | 9 | 2 crèches | 0 | 4 |
| | | Primary School | 10 | 5 Medium Primary Schools | 0 | |
| | | High School | 4 | 3 Medium Secondary Schools | 0 | |
| | | Hall | 2 | 2 Community Hall | 0 | |
| 13 | 1055 | Clinic | 0 | Small Clinic with Maternity Facility (1) | 1 | |
| | | Crèche | 9 | 1 crèche | 0 | |
| | | Primary School | 4 | 3 Medium Primary Schools | 0 | |
| | | High School | 1 | 2 Medium Secondary Schools | 1 | |
| | | Hall | 1 | 1 Community Hall | 0 | |
| 14 | 1844 | Clinic | 0 | Small Clinic with Maternity Facility and Health Point (2) | 2 | |
| | | Crèche | 7 | 2 crèches | 0 | 2 |
| | | Primary School | 8 | 6 Medium Primary Schools | 0 | |
| | | High School | 4 | 3 Medium Secondary Schools | 0 | |
| | | Hall | 3 | 2 Community Hall | 0 | |
| 15 | 1278 | Clinic | 1 | Small Clinic with Maternity Facility (1) | 1 | |
| | | Crèche | 3 | 1 crèche | 0 | 1 |
| | | Primary School | 5 | 4 Medium Primary Schools | 0 | |
| | | High School | 2 | 2 Medium Secondary Schools | 0 | |
| | | Hall | 2 | 1 Community Hall | 0 | |
| 16 | 3270 | Clinic | 1 | Medium Clinic with Maternity Facility and Mobile Point (2) | 1 | |
| | | Crèche | 5 | 3 crèches | 0 | 2 |
| | | Primary School | 5 | 9 Medium Primary Schools | 4 | |
| | | High School | 3 | 5 Medium Secondary Schools | 2 | |
| | | Hall | 2 | 3 Community Hall | 1 | |
| 17 | 1420 | Clinic | 3 | Small Clinic with Maternity Facility and Health | 0 | |

| Ward | Number of Households | Facility | Current | Backlogs | | Current Projects |
|------|----------------------|----------------|---------|---|-------------------------------|------------------|
| | | | | Type of Facility Required | Number of Facilities Required | |
| | | | | Point (2) | | |
| | | Crèche | 7 | 1 crèche | 0 | 1 |
| | | Primary School | 6 | 4 Medium Primary Schools | 0 | |
| | | High School | 2 | 2 Medium Secondary Schools | 0 | |
| | | Hall | 1 | 2 Community Hall | 1 | |
| 18 | 1725 | | | Small Clinic with Maternity Facility and Health Point (2) | 0 | |
| | | Clinic | 2 | | | |
| | | Crèche | 6 | 2 crèches | 0 | 3 |
| | | Primary School | 6 | 6 Medium Primary Schools | 0 | |
| | | High School | 5 | 3 Medium Secondary Schools | 0 | |
| 19 | 178 | Hall | 3 | 2 Community Hall | 0 | |
| | | Clinic | 1 | Mobile Point (1) | 0 | |
| | | Crèche | 0 | Population Catchment is too low | 0 | 1 |
| | | Primary School | 1 | 1 Small Primary School | 0 | |
| | | High School | 0 | Population Catchment is too low | 0 | |
| 20 | 1159 | Hall | 1 | Population Catchment is too low | 0 | |
| | | Clinic | 1 | Small Clinic with Maternity Facility (1) | 0 | |
| | | Crèche | 8 | 2 crèches | 0 | 4 |
| | | Primary School | 3 | 3 Medium Primary Schools | 0 | |
| | | High School | 2 | 2 Medium Secondary Schools | 0 | |
| 21 | | Hall | 1 | 1 Community Hall | 0 | |
| | | Clinic | 2 | Small Clinic with Maternity Facility and Mobile Point (2) | 0 | |
| | | Crèche | 1 | 1 crèche | 0 | 1 |
| | | Primary School | 6 | 4 Medium Primary Schools | 0 | |
| | | High School | 4 | 2 Medium Secondary Schools | 2 | |
| | | Hall | 0 | 1 Community Hall | 1 | |

| Ward | Number of Households | Facility | Current | Backlogs | | Current Projects |
|-------|----------------------|----------|---------|---------------------------|-------------------------------|------------------|
| | | | | Type of Facility Required | Number of Facilities Required | |
| TOTAL | | | 387 | 277 | 50 | 62 |

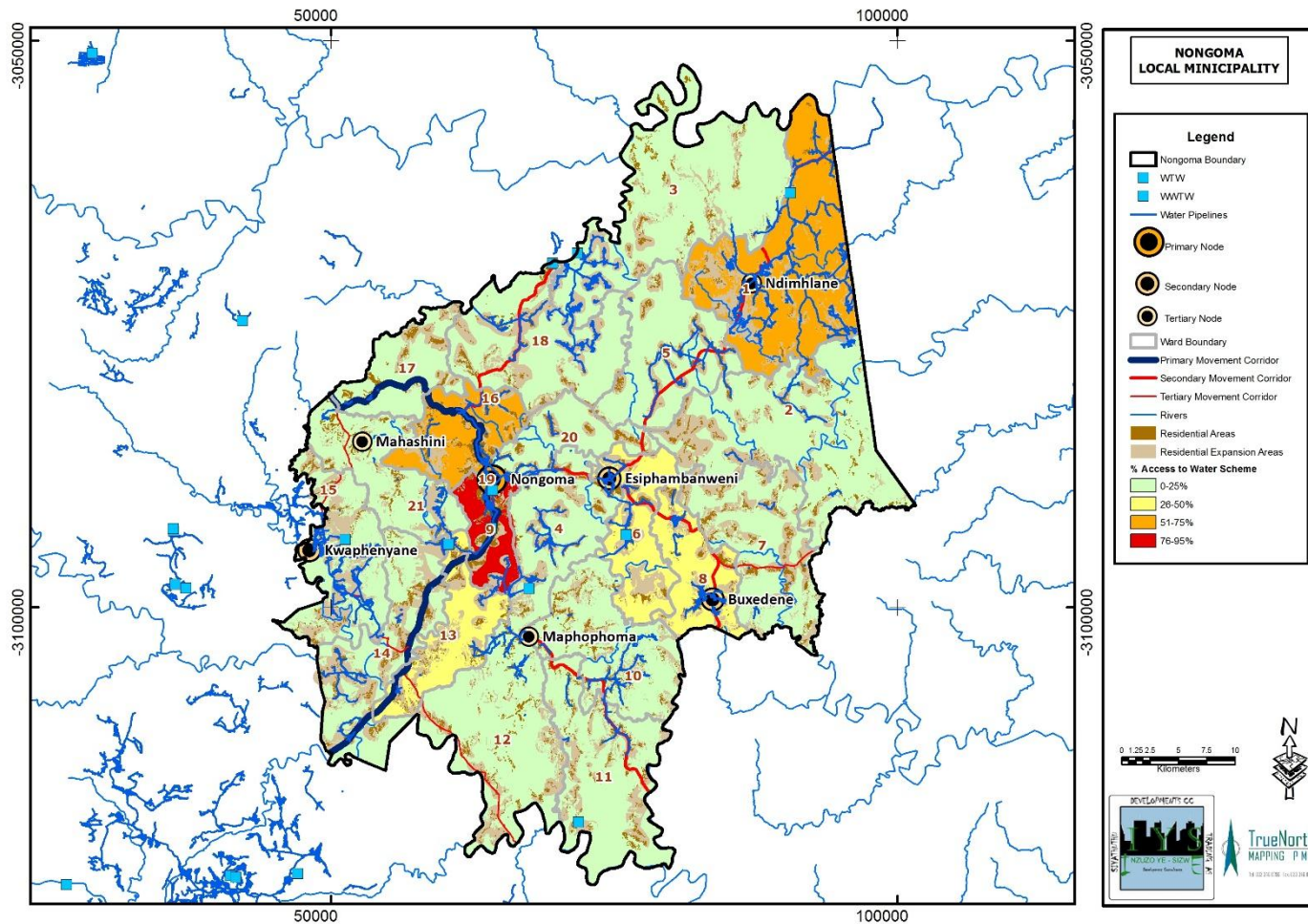
2.4 IMPLICATIONS

Alignments between the MIG projects and SDF are found to be currently lacking. There are very few projects that are directed towards the nodes and the corridors of the SDF. The sector departmental projects are also not aligned to the SDF and the planning standards. There are a number of projects that are proposed within the municipal area by sector departments, however these projects are not directed toward addressing the SDF priorities nor meeting the planning standards.

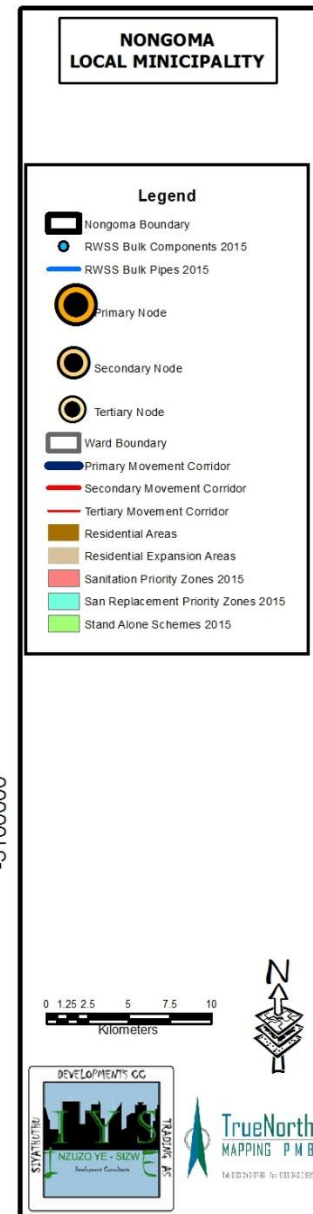
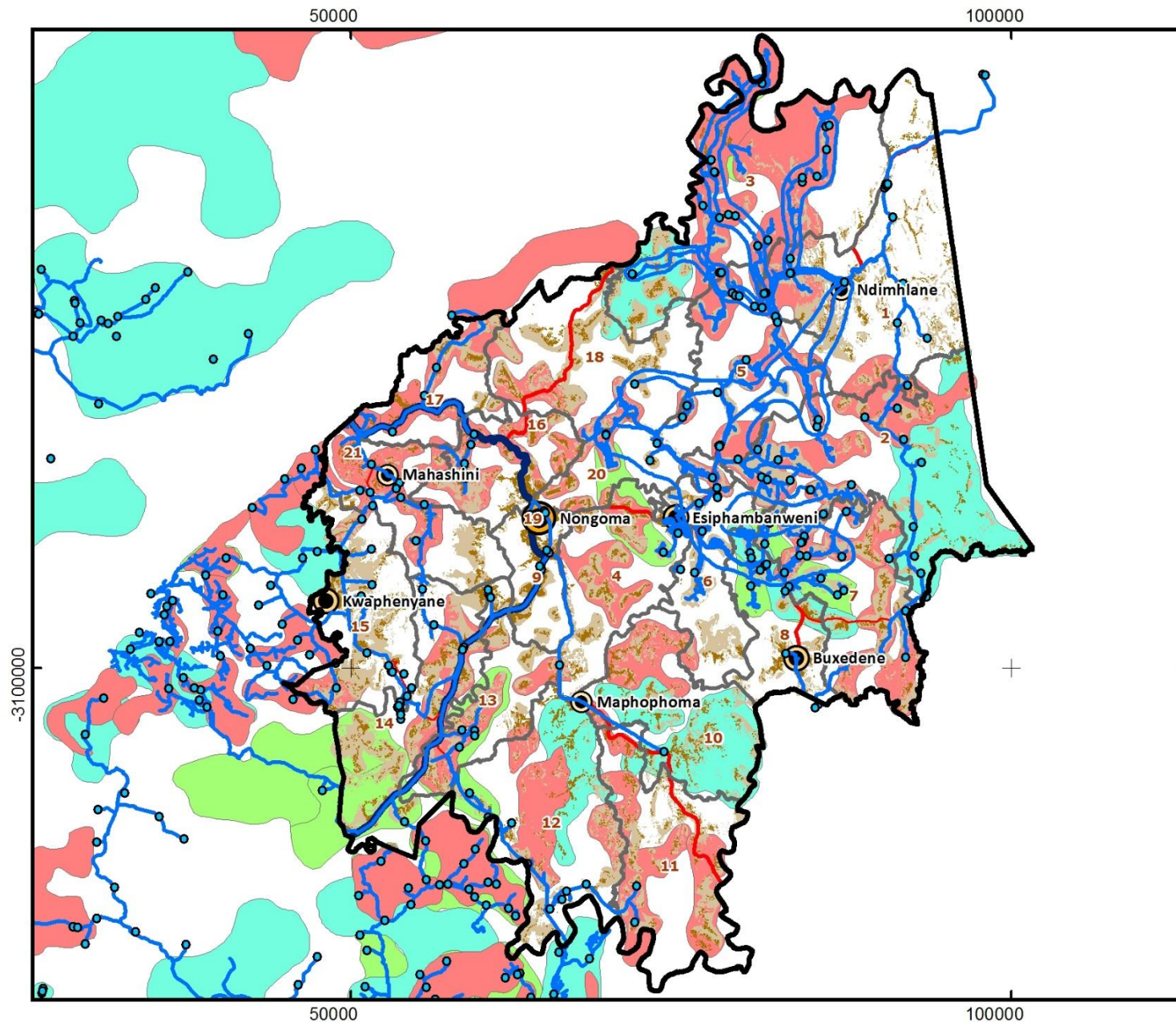
3. SERVICE DELIVERY PRIORITY AREAS

3.1 WATER PRIORITY AREAS

Nongoma IDP estimated the water backlogs are at 53% in the Nongoma Municipality and are mainly concentrated in the rural areas of the municipality. The majority of the SDF priority areas that were identified to be lacking access to water include Mahashini, Kwaphenyana and Maphophoma. According Zululand Water Services Development Plan (WSDP) there are plans in-place to address this situation through the proposed bulk water infrastructure pipelines. The proposal by the WSDP are in harmony with the SDF priority areas. A general concern that was raised in the IDP is that these proposals will take place after

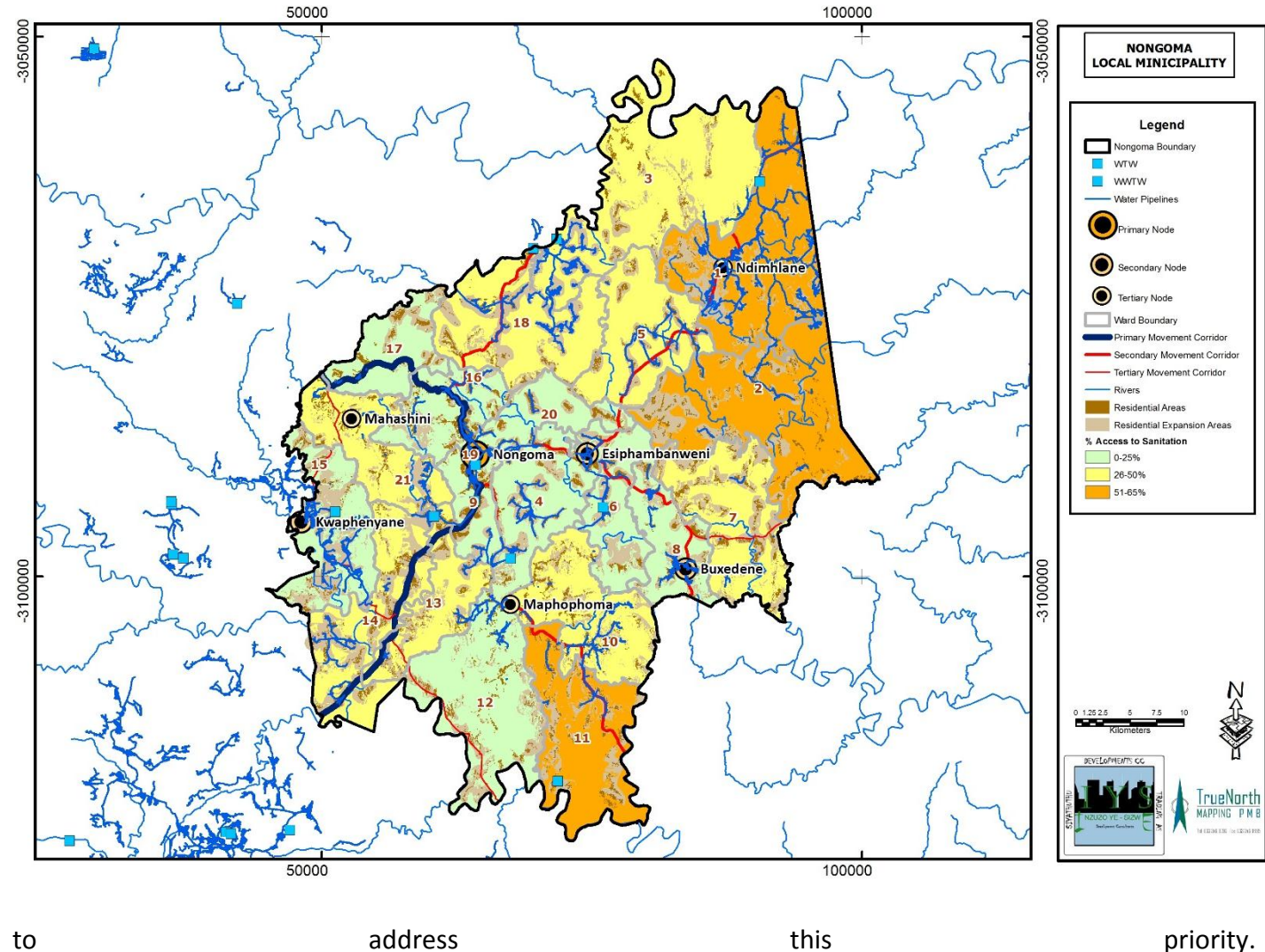


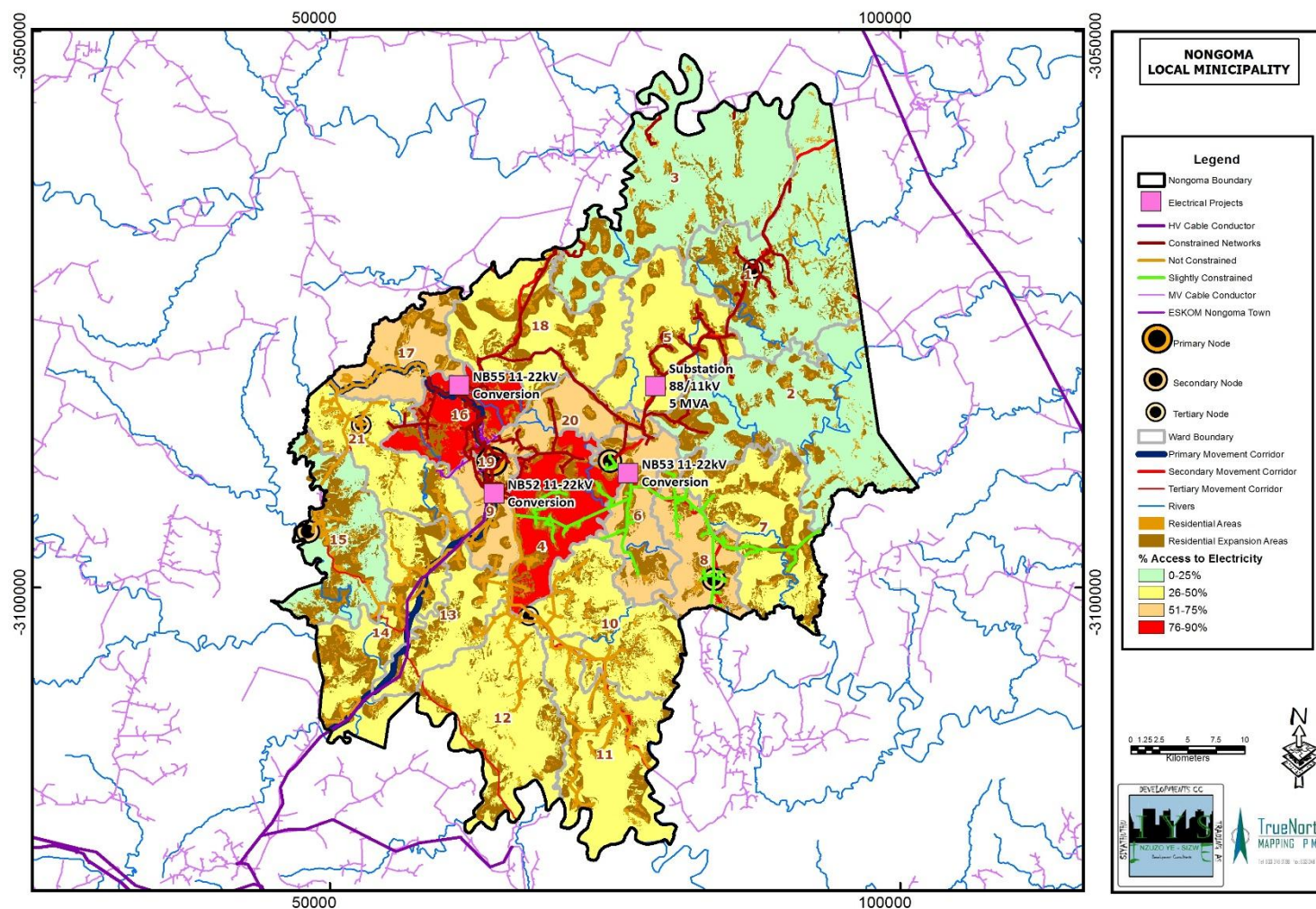
2017.



3.2 SANITATION PRIORITY AREAS

Nongoma IDP estimated the sanitation backlogs at 26% and stated that it is mainly concentrated in the rural areas of the municipality. The SDF priority areas that appeared to be encountering challenges with sanitation include rural settlements around Nongoma, Esiphambanweni, Buxedene, Maphophoma and Kwaphenyane. However, there are a number of sanitation projects which have been carried out by Zululand District Municipality in the recent years in order to address this backlog. The approach by Zululand towards the rolling out of sanitation infrastructure is fairly robust



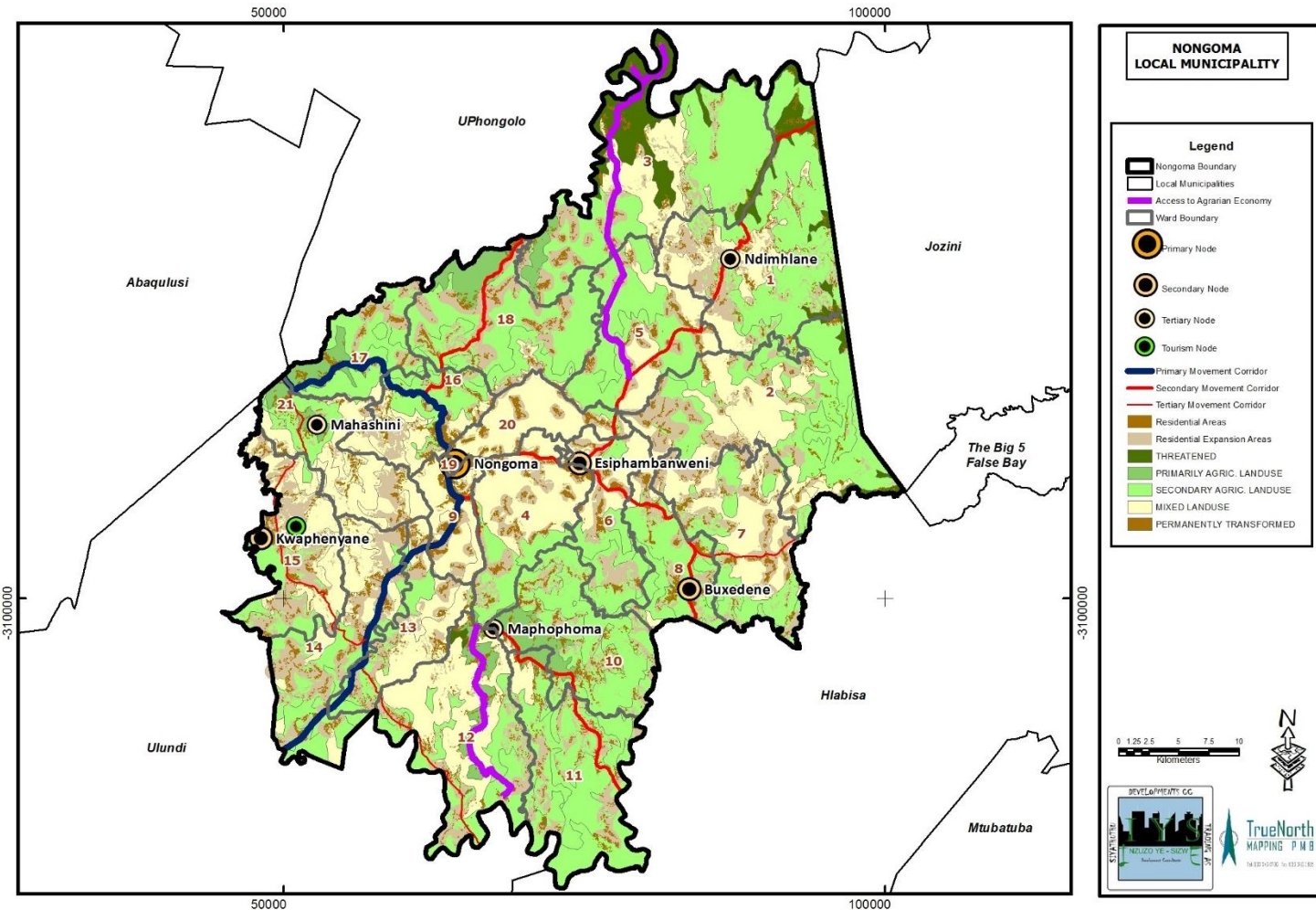


The supply of electricity within Nongoma has positively increased over the years. The majority of the nodal areas have access to electricity including the town of Nongoma and Esiphambanweni. The general concern is that the network is strained in some parts of the Municipality including areas around Ndimhlane and KwaPhenyane. These areas were also recorded to be having the highest backlogs in 2011 census. There are proposals to deliver infrastructure such as 88/22 KV sub stations and conversions in wards 5, 6, 9 and 16. These will assist in resourcing the strained network.

4. ECONOMIC INFRASTRUCTURE PRIORITY AREAS

4.1 ROAD INFRASTRUCTURE AND AGRICULTURAL PRIORITY AREAS

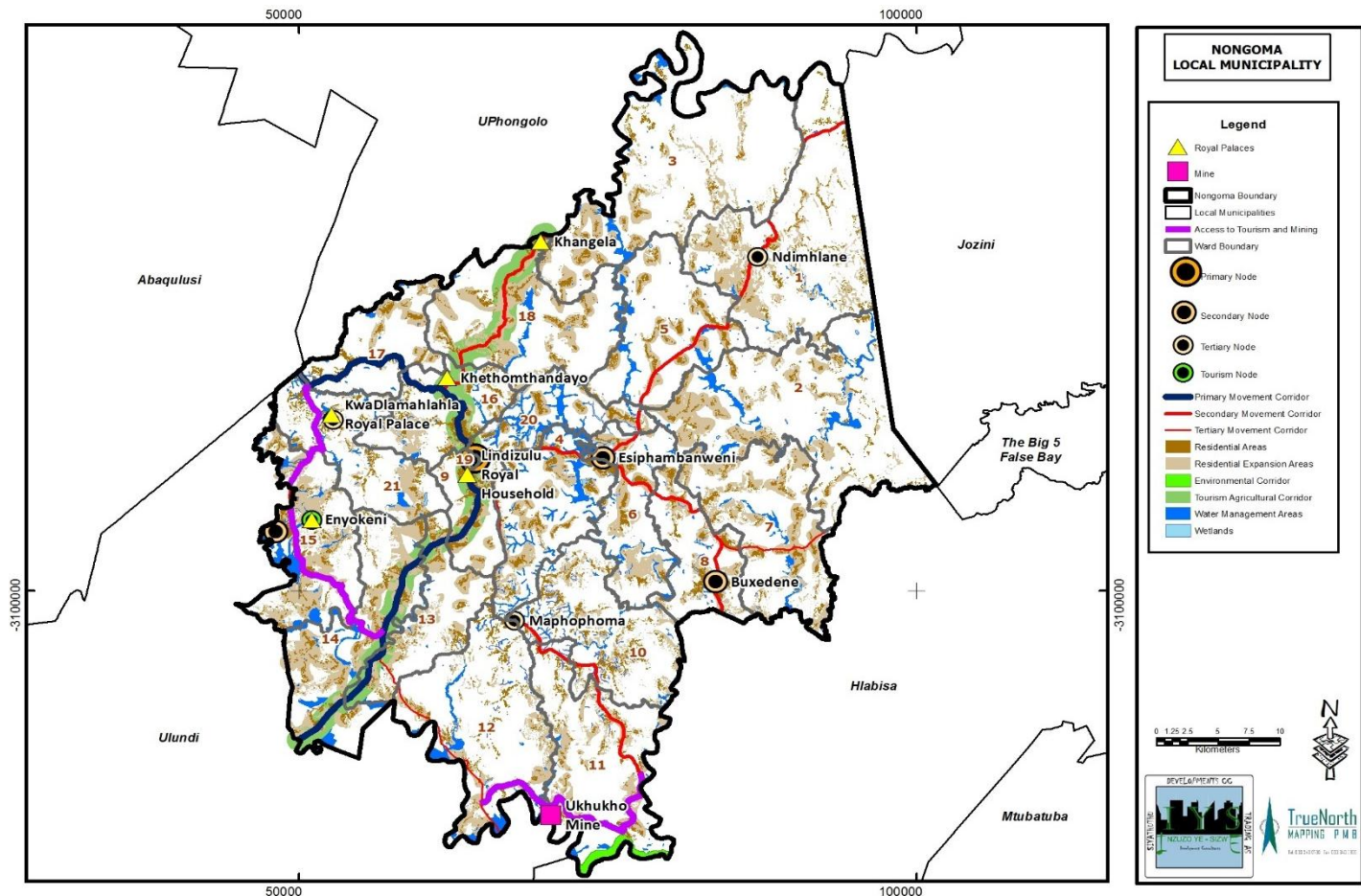
The condition of road infrastructure to support few tracks of agricultural land is a serious concern within Nongoma more especially the access roads to most of the agricultural prime land within Ward 3, 10, 12 and 17. The proposed road upgrades which will be beneficial to the good potential agricultural areas are D1901 (from P735) in ward 10 which will be funded for R2 500 000.00 and D1915 which will be funded for R1 300 000.00. D2409 is also providing access to good potential agricultural land in Ward 12. This road will be upgraded for R 2 450 000.00. the other roads that will need attention are D1815, L2594, D1853 and



4.2 ROAD INFRASTRUCTURE FOR TOURISM AND MINING INDUSTRY

Nongoma is a critical tourism zone given the fact that it is the seat of the Zulu Kingdom (Hlalankosi) and a home of King Goodwill Zwelithini, the hereditary traditional leader of the Zulu nation, and his royal palaces are among the main tourist attractions in this region. Access and visibility to these tourist attractions is very important for the tourism economy. There are five Royal Palaces (Izigidlo ZeSilo) that exist within the area which are:

- Khangela – is located along R66 (P298) which is identified as a Secondary Movement Corridor. This facility can be considered to be highly accessible and the road is in a good condition;
- Khethomthandayo – is located along R618 (Primary Movement Corridor) and R66 (Secondary Movement Corridor). These routes are also in a good condition;
- KwaDlamahlahla – is located along P736 (Tertiary Movement Corridor) which is



a gravel road that was upgraded during 2010. This route will need to be regularly maintained;

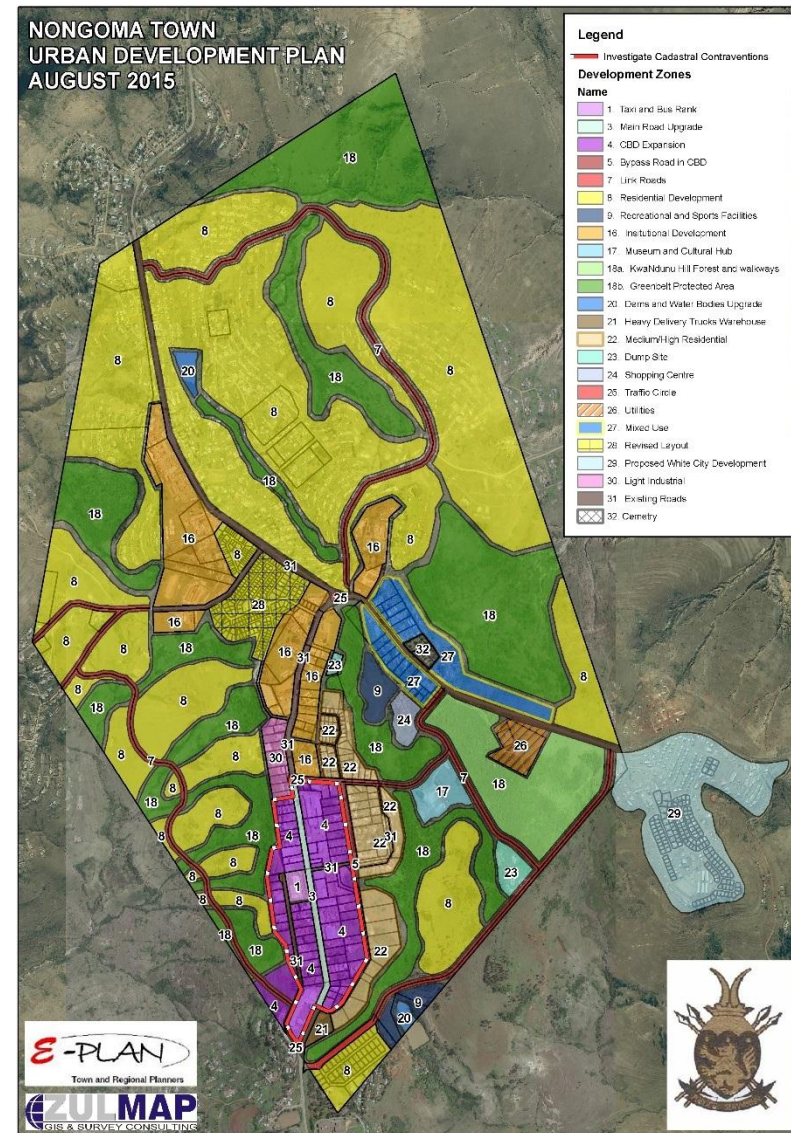
- ☛ Enyonkeni - is located along P736 (Tertiary Movement Corridor) which is a gravel road that was upgraded during 2010. This route will need to be regularly maintained, and
- ☛ Lindizulu – is located along R66 (Secondary Movement Corridor) which is a tar road that is in good condition.


There is a mine which is located towards the south of the municipal area within ward 11. UKhukhu Mine is adjacent to D854 in close proximity to Siyaphakama High School. This route is not identified as an important corridor within the SDF and it is currently gravel, however it should be regularly maintained.

4.3 INFRASTRUCTURE FOR THE PRIMARY NODE: NONGOMA TOWN

The town of Nongoma is identified as a Primary Node which is the main growth of the municipal area. An urban development framework and the town planning scheme was developed in 2015 for the area. There are a number of infrastructure proposals that were developed for the area in order to resource this important node for future economic development. These are as follows:

- ☛ Taxi and Bus Rank;
- ☛ Main Road Upgrade;



 CBD

Bypass

Road;

- ☛ Link Roads;
- ☛ Recreational and Sport Facilities;
- ☛ Museum and Cultural Hub; and
- ☛ Traffic Circle.

4.4 CAPACITY OF BULK WATER AND SANITATION ON SDF PRIORITY NODES

The sustainability of the main water source of Nongoma town is under severe strain and no longer sustainable during drought periods. The installation of a bulk pipeline from the Black Mfolozi River to Nongoma is currently in progress to address this issue. Nongoma town frequently experiences intermittent water supply to consumers and businesses, even outside of drought periods. Excessive water usage by unmetered consumers and high water losses contribute to the problem. Water supply to Nongoma town is via the Vuna Water Treatment Works. The Vuna Water Treatment Works is presently producing an average of 4.2 M/l per day with water losses estimated to be 50%. The actual consumption requirements for the town are less than 2 M/l of water per day. The Vuna dam supplies raw water to the treatment plant, but is silted up and it is estimated to have lost 75% of its storage capacity. The bulk raw water supply is thus very vulnerable to the seasonal

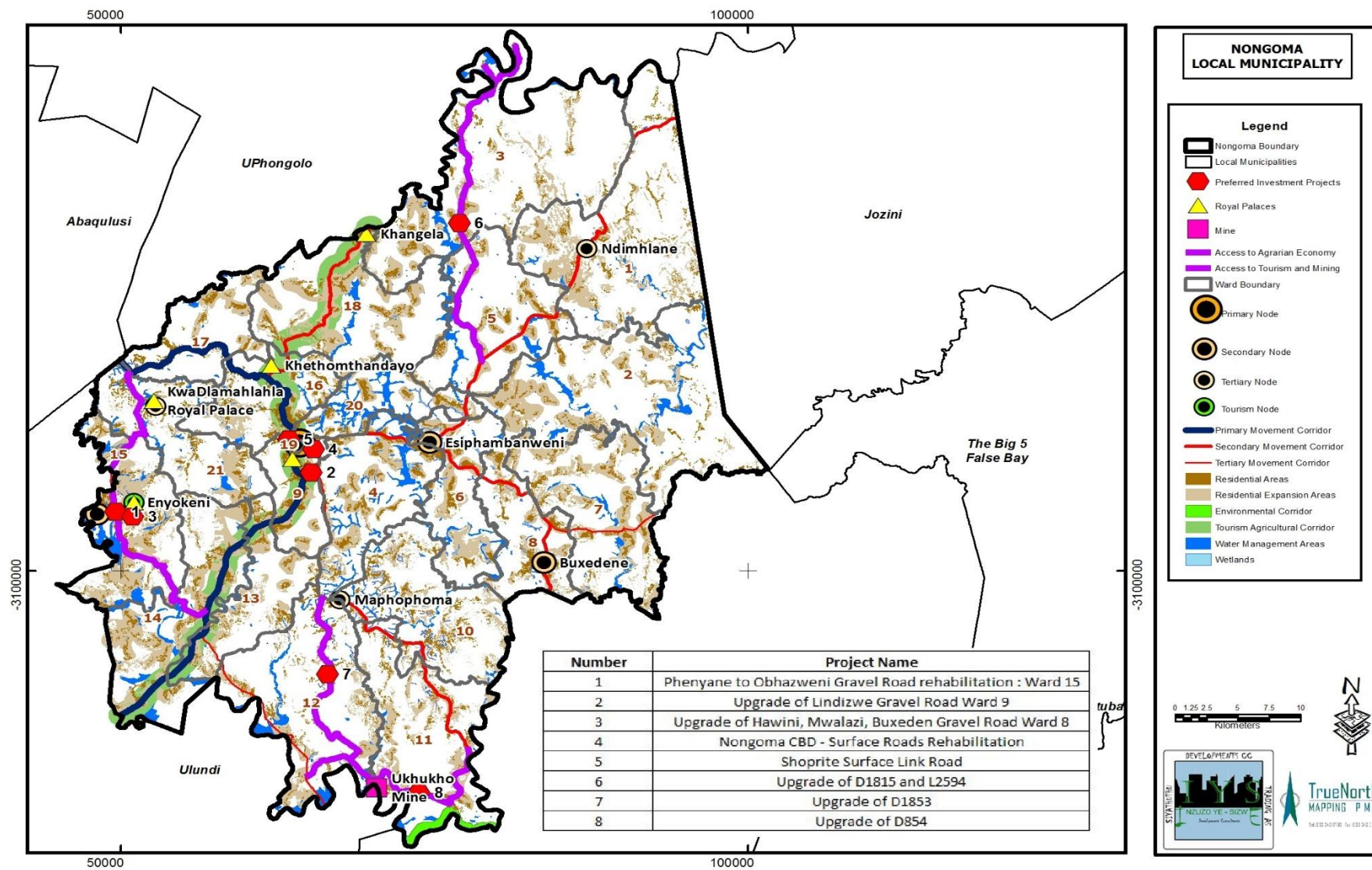
rainfall and ongoing high maintenance and repair costs to the plant and the bulk and reticulation network. A second dam, the Vokwana dam, was constructed with the intention to augment the supply to the treatment works and to redress the siltation problem and is situated at Mbili. The Usuthu RWSS (Regional Water Supply Scheme) entails bulk and reticulation of water to Nongoma town and a new water treatment works at the Black Umfolozi River. The town of Nongoma has a waterborne sewer system which flows to the sewer treatment works. However, as part of the Usuthu RWSS, the investigation and design of the bulk and reticulation of the sewer networks to Nongoma town and a new water treatment works is included.

4.5 CAPACITY OF ELECTRICITY INFRASTRUCTURE TO ACCOMMODATE FUTURE DEVELOPMENT

The majority of the nodal areas are facing a challenge with the capacity of the existing network to accommodate future development. There are three nodes that are within a network that is not constrained which are Mahashini, Kwaphenyane and Maphophoma. However, there are plans in-place to resource the existing strained network. This includes the proposed:

- ☛ 88/11 KV Substation: this involves the 5MVA substation which is located in ward 5;

- ☛ NB55 11/22 KV Conversion: which is located in ward 17;
- ☛ NB52 11/22 KV Conversion: which is located in ward 9; and
- ☛ NB53 11/22 KV Conversion: which is located adjacent Esiphambanweni.



5. PREFERRED CAPITAL INVESTMENT AREAS

| SDF Rationale | Project Name | Location | Sources of Funds | Budget Estimate |
|---|---|----------|-----------------------------|------------------|
| Improving Access to Agrarian Economy: High Potential Agricultural Land | D1815 – L2594 | Ward 3 | KZN Department of Transport | R 105 000 000.00 |
| | P736 – D1853 | Ward 17 | KZN Department of Transport | R 35 000 000.00 |
| | D1853 – L2595 | Ward 12 | KZN Department of Transport | R 70 000 000.00 |
| | P735 – D1906 | Ward 10 | KZN Department of Transport | R 35 000 000.00 |
| Improving Access to Tourism and Mining Areas | P736 | Ward 15 | KZN Department of Transport | R 70 000 000.00 |
| | D854 | Ward 11 | KZN Department of Transport | R 35 000 000.00 |
| Resourcing the Primary Node with Infrastructure | Taxi and Bus Rank | Ward 19 | Nongoma Municipality: MIG | R 4 000 000.00 |
| | Main Road Upgrade | Ward 19 | Nongoma Municipality: MIG | R 3 500 000.00 |
| | CBD Bypass Road | Ward 19 | Nongoma Municipality: MIG | R 3 500 000.00 |
| | Link Roads | Ward 19 | Nongoma Municipality: MIG | R 3 500 000.00 |
| | Recreational and Sport Facilities | Ward 19 | Nongoma Municipality | R 2 000 000.00 |
| | Museum and Cultural Hub | Ward 19 | Department of Public Works | R 10 000 000.00 |
| | Traffic Circle | Ward 19 | Nongoma Municipality: MIG | R 1 000 000.00 |
| Identified within Primary and Secondary Nodes (Existing MIG Projects) | Upgrade of Lindizwe Gravel Road | Ward 9 | Nongoma Municipality: MIG | R 2 282 329.00 |
| | Upgrade of Hawini, Mwalazi, Buxedeni Gravel Road | Ward 8 | Nongoma Municipality: MIG | R 2 202 201.45 |
| | Nongoma CDB - Surface Roads Rehabilitation | Ward 9 | Nongoma Municipality: MIG | R 10 000 000.00 |
| | Shoprite Surface Link Road | Ward 19 | Nongoma Municipality: MIG | R 2 200 000.00 |
| | Phenyane to Obhazweni Gravel Road rehabilitation | Ward 15 | Nongoma Municipality: MIG | R 5 714 913.62 |
| Identified through the application of planning standards | Small Clinic with Maternity Facility and Health Station | Ward 1 | Department of Public Works | R 10 000 000.00 |
| | Health Station | Ward 2 | Department of Public Works | R 1 500 000.00 |
| | Health Station | Ward 3 | Department of Public Works | R 1 500 000.00 |
| | Health Station | Ward 5 | Department of Public Works | R 1 500 000.00 |
| | Small Clinic with Maternity Facility and Health Station | Ward 7 | Department of Public Works | R 10 000 000.00 |

| SDF Rationale | Project Name | Location | Sources of Funds | Budget Estimate |
|---------------|---|----------|----------------------------|------------------|
| | Medium Clinic with Maternity Facility | Ward 9 | Department of Public Works | R 15 000 000.00 |
| | Mobile Point | Ward 10 | Department of Public Works | R 1 500 000.00 |
| | Mobile Point | Ward 11 | Department of Public Works | R 1 500 000.00 |
| | Small Clinic with Maternity Facility | Ward 13 | Department of Public Works | R 8 500 000.00 |
| | Small Clinic with Maternity Facility and Health Point | Ward 14 | Department of Public Works | R 10 000 000.00 |
| | Community Hall | Ward 5 | Nongoma Municipality: MIG | R 2 000 000.00 |
| | Community Hall | Ward 7 | Nongoma Municipality: MIG | R 2 000 000.00 |
| | 2 Community Hall | Ward 9 | Nongoma Municipality: MIG | R 4 000 000.00 |
| | Community Hall | Ward 16 | Nongoma Municipality: MIG | R 2 000 000.00 |
| | Community Hall | Ward 17 | Nongoma Municipality: MIG | R 2 000 000.00 |
| | Medium Secondary Schools | Ward 7 | Department of Public Works | R 5 000 000.00 |
| | Medium Secondary Schools | Ward 13 | Department of Public Works | R 5 000 000.00 |
| | Medium Secondary Schools | Ward 11 | Department of Public Works | R 5 000 000.00 |
| | 2 Medium Secondary Schools | Ward 16 | Department of Public Works | R 10 000 000.00 |
| | 5 Medium Primary Schools | Ward 9 | Department of Public Works | R 25 000 000.00 |
| | 4 Medium Primary Schools | Ward 16 | Department of Public Works | R 20 000 000.00 |
| Total | | | | R 542 899 444.07 |

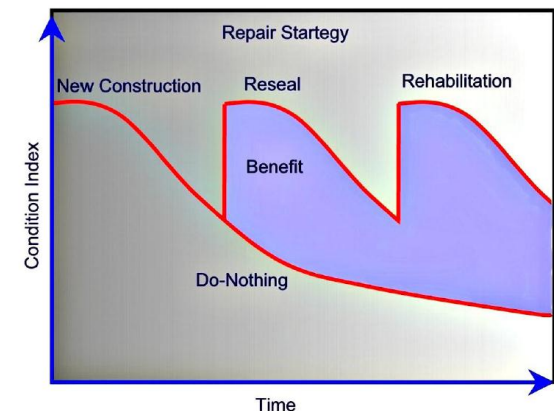
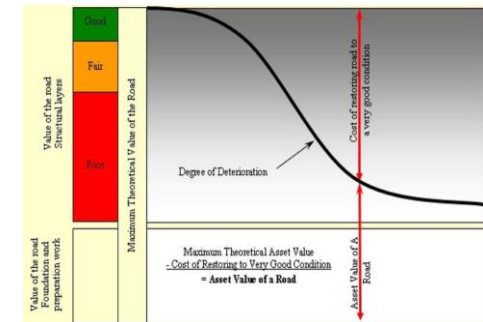
Summary of Funding Sources:

- ☛ Municipal Infrastructure Grant = R 51 899 444.07
- ☛ Department of Public Works = R 141 000 000.00
- ☛ KwaZulu-Natal Department of Transport = R 350 000 000.00

6. GENERIC INFRASTRUCTURE MAINTENANCE PROGRAMME

6.1 PROJECTED FUTURE ROADS ANNUAL MAINTENANCE PROGRAMME

| ROAD TYPE | LOCAL ACCESS COLLECTOR ROAD (12M) BLACKTOP-TAR |
|---|--|
| <p>WHY LONG-TERM ROAD MAINTENANCE PROGRAMME?</p> <p>With reference to the graph (insert), the lifecycle of the road infrastructure undergoes three stages of natural deterioration. These are (a) slow weakening and deterioration of the road surface with no effect on the foundation and pavement structure. Although the pace at which this takes place depends on traffic loads as well as the effects of water, solar radiation, oxidation and temperature change the common period for this phase is 5-10 years for the new infrastructure. (b) This is a critical phase which takes place after 20-25 years. At the beginning of this phase, the road's basic structure is still intact, surface faults are relatively minor, and ordinary users may get the impression that the roads are still quite firm. However, this is not the case. The basic structure below the road surface starts to become damaged. Once superficial damage (potholes) become obvious, it is certain that its basic structure has been damaged. (c) This is a total destruction stage. At this stage, the first sign is the disappearance on the surfacing and layers of road foundation. Each time a heavy vehicle passes chunks of surfacing break-off until the surfacing is gone. Vehicles operating costs and the number of serious accidents rise considerably.</p> | |
| <p>SHORT-TERM (5-10 YEARS) MAINTAINANCE COST PER KM:</p> <p>R 100 000 per km (This involves road markings and fixing potholes after five to ten years depending on the deterioration pace of the infrastructure)</p> | <p>ROAD MAINTENANCE MODEL:</p> <p>The maintenance of the road infrastructure should follow a proper model and ramparts schedule which is reflected on graph (insert). This can only be executed with prompt responses to the lifecycle and ageing of the road infrastructure. As follows:</p> <ul style="list-style-type: none"> After 10 years the blacktop (tar) roads should be subjected to minor maintenance which includes patching of potholes and road markings After 20 – 25 years the roads should be resealed at the costs which is equivalent to 20% of the new road construction costs After 30 – 50 years the roads should be subjected to a major rehabilitation at a cost which is equivalent to 80% of the new road construction costs. |
| <p>MEDIUM-TERM (20-25 YEARS) MAINTAINANCE COST PER KM:</p> <p>R 700 000 per km (This involves road resealing and road markings)</p> | |
| <p>LONG-TERM (30-50 YEARS) MAJOR REHABILITATION COST PER KM:</p> <p>R 2 800 000 per km (this involves major rehabilitation of the basic road structure which includes the foundation, surface</p> | |



and road markings)

ROAD TYPE LOCAL ACCESS COLLECTOR GRAVEL ROAD (12M)

GRAVEL ROAD MAINTENANCE CHALLENGES?

Most of the roads that are found within Nongoma are gravel. With reference to figure (insert), in terms of capital outlay the gravel roads are cheaper to construct than the blacktop tar roads however such routes require extensive maintenance within a very short space of time due to their short lifecycle which implies that it becomes extremely expensive to keep these roads. It is estimated that 240 tons of gravel is lost per annum (per km) of road while the blacktop tar roads require less maintenance per annum. Good natural gravels are also becoming scarce and the cost of re-gravelling work is becoming increasingly expensive due to longer haul distances involved, which in turn means larger numbers of loaded trucks using the adjacent roads. Where materials are poor and traffic volumes and loadings high, the benefits derived from regravelling can be extremely short lived and blacktop surfacing becomes the only cost effective option, but necessitates higher funds up front. Nongoma Municipality is advised to consider upgrading these roads into tar on an incremental basis since this would be a viable option.



SHORT-TERM (1 YEAR) MAINTAINANCE COST PER KM:

R 300 000 per km (Reshaping surface, shoulder and grader blading).

GRAVEL ROAD MAINTENANCE MODEL:
Given the short lifecycle of the gravel roads, they are only two processes of maintaining this road which are as follows:

MEDIUM-TERM (2 YEARS) MAINTAINANCE COST PER KM:

R 900 000 per km (Reshaping the entire cross-section and regravelling)



Grader blading - blading is very similar to the resealing and rehabilitation strategy and is cheaper than regravelling a road. Although there is a common belief that the road surface condition can be maintained by simply blading this is not the case because blading requires a reasonable thickness or layer of gravel material with which to work, and it must also be at the correct moisture content to render it workable. Unfortunately, ideal gravel is often not found close by the road and contractors often have to make do with inferior material. It is also difficult and ineffective to blade roads containing large stones or where bedrock protrudes through, and in these instances, graders will be subject to heavy wear and tear and possible damage placing further strain on the budget. Blading in inappropriate conditions can, in fact,

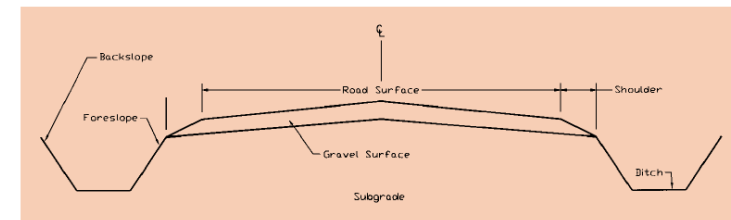


Figure 1: The components of the roadway cross section.

lead to the road surface deteriorating at an even quicker rate than if it were left alone.
 Regravelling – each road that carries a huge traffic volume (plus frequented by seasonal rainfall) needs to be regravelled at least once after two years to ensure that it is able to retain its proper state.





6.2 PROJECTED WATER AND SANITATION PLANTS ANNUAL MAINTENANCE PROGRAMME

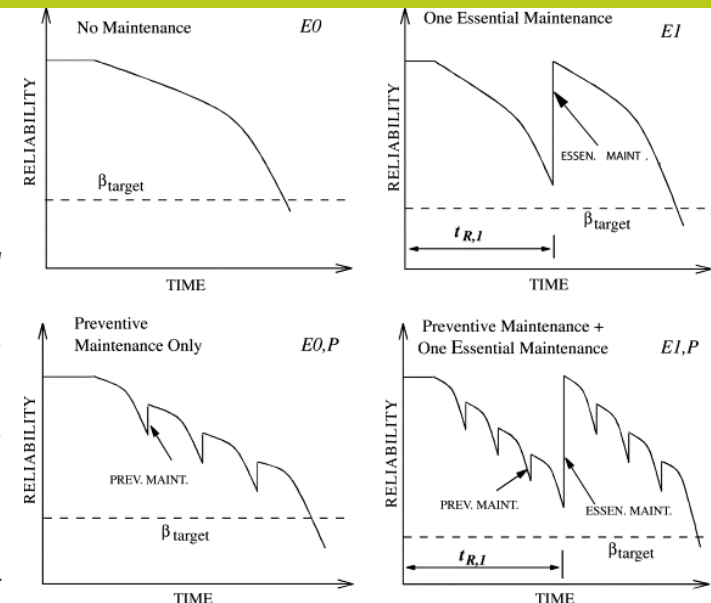
WATER SCHEMES



WATER SCHEME

WHY LONG-TERM MAINTENANCE PROGRAMME?

With reference to the graph (insert), the lifecycle of the water infrastructure undergoes three stages of natural deterioration. A number of different maintenance strategies can be used to maintain the state of the asset. Maintenance can be corrective or preventive, where corrective maintenance brings a failed system back to its operational condition, and preventive maintenance is performed to reduce unplanned and disruptive system failures. In general, maintenance activities can occur on asset failure, according to a schedule, asset condition or risk of asset failure:

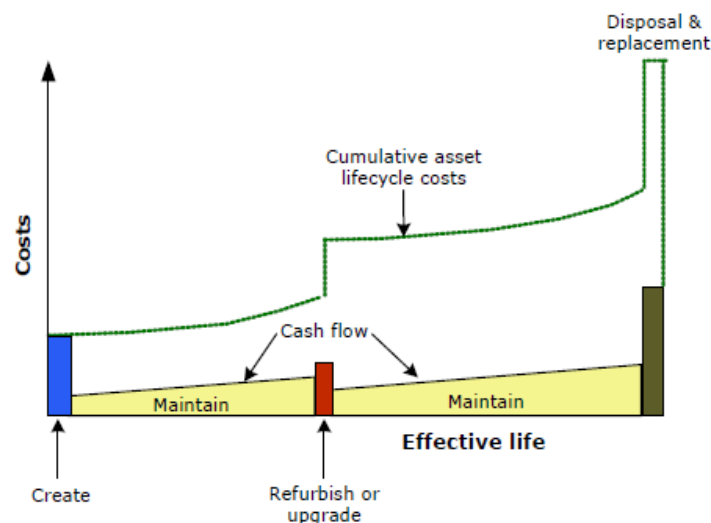
-  **Corrective maintenance.** This strategy is usually performed if failure consequences are low and the failed item is inexpensive. Damages caused by the failures may create more cost than a different maintenance strategy; therefore, this approach usually does not result in the lowest cost. Also, using this approach service reliability can deteriorate significantly and can cause additional economic consequences for the network operator.
-  **Scheduled maintenance.** The maintenance is performed at defined intervals if failures are costly or safety critical. The scheduled replacement is worthwhile when a wear-out of the component starts, i.e. the failure rate increases with time.
-  **Condition-based maintenance.** Increasingly, maintenance is carried out according to the condition of the asset. Predictive maintenance was proposed based on the development of machine diagnostic techniques, when preventive actions were taken due to symptoms of failure. In this approach maintenance activity is triggered when the estimated asset condition reaches a certain threshold. The ultimate goal is to carry out the maintenance at the most convenient time when the service will not be disrupted. However, this strategy can have high initial costs and measured data are not always trivial to turn into useful knowledge about the health of component.
-  **Risk-based maintenance.** This strategy considers not only the asset condition but also takes account of failure consequences and its impact¹⁹² on the performance of the network. The main aim of this method is to reduce the overall risk that may result as the consequence of unexpected failures. The high-risk components of a system should be inspected and maintained usually with greater frequency and thoroughness than the low risk components.



| WATER SCHEMES | WATER SCHEME |
|---|---|
| <p>SHORT TERM (0-25 YEARS) MAINTAINANCE COST</p> <p>R 415 000.00 of which is equivalent to 10% of the new construction costs, to be used for planning, construction maintenance (pressure, leakage, future growth, the cleansing of the pipes, etc.)</p> | <p>WATER MAINTENANCE MODEL:</p> <p>The maintenance of the water infrastructure within the three (3) water Schemes should follow a proper model and a ramparts schedule which is reflected on graph (insert). This can only be executed with prompt responses to the lifecycle and ageing of the road infrastructure. As follows:</p> <ul style="list-style-type: none">  <i>0 -5 years this is the initial phase of the lifecycle whereby the infrastructure is installed, trenches are dug, pipes are fitted and the infrastructure is buried. This phase is successor of the planning, designing and construction phase. However, during the lifecycle of the infrastructure, it is very vital that the infrastructure is monitored on the regular basis, since drinking water supply also involves public health issues.</i> |
| <p>MID TERM (25-30 YEARS) MAINTAINANCE COST</p> <p>R 830 000.00 of which is equivalent to 20% of the new construction costs, to be used for the refurbishments and upgrading of the pipe network</p> | <ul style="list-style-type: none">  <i>After 5 - 25 Water supply networks are being monitored on parts of the master planning for the community of Nongoma. Their planning must consider many factors, current demand, future growth, leakage, pressure, pipe size, pressure loss, firefighting flows, etc. using pipe network analysis and other tools. Another issue that is of prime important within the Three (3) Water Schemes is that as water passes through the distribution system, the water quality can degrade by chemical reactions and biological processes. Corrosion of metal pipe materials in the distribution system can cause the release of metals into the water with undesirable aesthetic and health effects. Release</i> |
| <p>LONG TERM (30-50 YEARS) MAINTAINANCE COST</p> <p>R2 905 000.00 of which is equivalent to 20% of the new construction costs, to be used for the major rehabilitation of the infrastructure</p> | |

WATER SCHEMES

WATER SCHEME



of iron from unlined iron pipes can result in customer reports of "red water" at the tap. Release of copper from copper pipes can result in customer reports of "blue water" and/or a metallic taste. Release of lead can occur from the solder used to join copper pipe together or from brass fixtures. Copper and lead levels at the consumer's tap are regulated to protect consumer health. Therefore, utilities will often adjust the chemistry of the water before distribution to minimize its corrosiveness. The simplest adjustment in this phase involves control of pH and alkalinity to produce water that tends to passivate corrosion by depositing a layer of calcium carbonate. Corrosion inhibitors are often added to reduce release of metals into the water. Common corrosion inhibitors added to the water are phosphates and silicates. Maintenance of a biologically safe drinking water is another goal in water distribution. Typically, a chlorine based disinfectant, such as sodium hypochlorite or monochloramine is added to the water as it leaves the treatment plant. Booster stations can be placed within the distribution system to ensure that all areas of the distribution system have adequate sustained levels of disinfection. (cost which is equivalent to 10% of the new construction costs)

After 25-30 years the pipe network should undergo refurbishment or upgrade at the costs which is equivalent to 20% of the new construction costs

After 30 – 50 years the pipe network should be subjected to a major rehabilitation at a cost which is equivalent to 70% of the new construction costs.

6.3 PROJECTED ANNUAL MAINTENANCE PROGRAMME FOR SELECTED PUBLIC FACILITIES

BUILDING TYPE

JUNIOR PRIMARY SCHOOL

RATIONAL TOWARDS BUILDING MAINTENANCE

The maintenance of a building facility is divided into two categories which are corrective maintenance (repair works) and schedule maintenance (planned). Corrective maintenance is an immediate works which require urgent action to protect the building or parts of the building from further destruction which may affect the safety of the building, occupants and the entire activities inside the building inclusive of Roof leaking, wall cracks, Sunken ground, Pipe/ water tank busting and Electrical supply interruption due to tripping. Scheduled maintenance are mostly understood and being carried out periodically for Safety of the building itself and occupants, Long term preservation (enhance life cycle), Enhance asset value, Avoid and minimize disruption.



SHORT-TERM (1 – 2 YEARS) MAINTAINANCE COST:

R 30 000 (corrective maintenance).

MEDIUM-TERM (5-10 YEARS) MAINTAINANCE COST:

R 65 000 (schedule maintenance)

LONG-TERM (25 YEARS) MAINTAINANCE COST:

R 120 000 (schedule maintenance including roof refurbishment)

GENERAL SCHEDULED MAINTENANCE PLAN FOR BUILDINGS

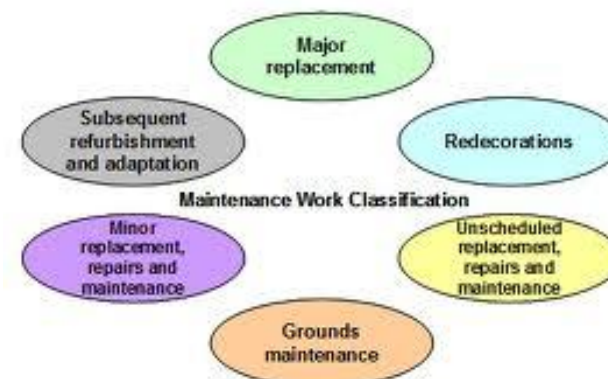
- *Monthly / Annually – Annual checking of electrical equipment by professional trades people, Annual pest control treatment, Monthly test of alarm systems and smoke detectors, Monthly filter checks and cleaning for air conditioning unit, Annual inspection of ceilings, floors, paving, plumbing, internal painting, door hinges, hooks and locks.*

- *Every two years – Replace of glass where necessary and powder coated finishes applied where necessary.*

- *Every five years – Internal painting.*

- *Every ten years – External painting, Replacement of floor coverings, Replacement of guttering and Replacement of electrical wiring.*

- *Every twenty-five years – roof refurbishments / replacement.*

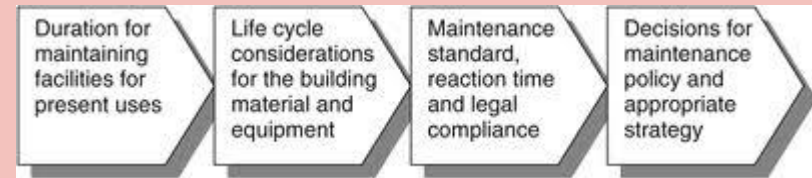


BUILDING TYPE

CLINIC

RATIONAL TOWARDS BUILDING MAINTENANCE

The maintenance of a building facility is divided into two categories which are corrective maintenance (repair works) and schedule maintenance (planned). Corrective maintenance is an immediate works which require urgent action to protect the building or parts of the building from further destruction which may affect the safety of the building, occupants and the entire activities inside the building inclusive of Roof leaking, wall cracks, Sunken ground, Pipe/ water tank busting and Electrical supply interruption due to tripping. Scheduled maintenance are mostly understood and being carried out periodically for Safety of the building itself and occupants, Long term preservation (enhance life cycle), Enhance asset value, Avoid and minimize disruption.



SHORT-TERM (1 – 2 YEARS) MAINTAINANCE COST:

R 60 000 (corrective maintenance).

MEDIUM-TERM (5-10 YEARS) MAINTAINANCE COST:

R 80 000 (schedule maintenance)

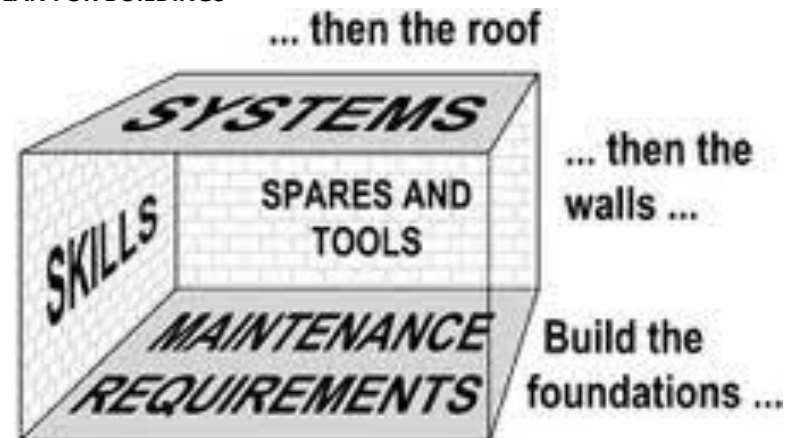
LONG-TERM (25 YEARS) MAINTAINANCE COST:

R 160 000 (schedule maintenance including roof refurbishment)

GENERAL SCHEDULED MAINTENANCE PLAN FOR BUILDINGS

■ *Monthly / Annually – Annual checking of electrical equipment by professional trades people, Annual pest control treatment, Monthly test of alarm systems and smoke detectors, Monthly filter checks and cleaning for air conditioning unit, Annual inspection of ceilings, floors, paving, plumbing, internal painting, door hinges, hooks and locks.*

- *Every two years – Replace of glass where necessary and powder coated finishes applied where necessary.*
- *Every five years – Internal painting.*
- *Every ten years – External painting, Replacement of floor coverings, Replacement of guttering and Replacement of electrical wiring.*
- *Every twenty-five years – roof refurbishments / replacement.*



| BUILDING TYPE | POLICE STATION |
|---|---|
| <p>RATIONAL TOWARDS BUILDING MAINTENANCE</p> <p>The maintenance of a building facility is divided into two categories which are corrective maintenance (repair works) and schedule maintenance (planned). Corrective maintenance is an immediate works which require urgent action to protect the building or parts of the building from further destruction which may affect the safety of the building, occupants and the entire activities inside the building inclusive of Roof leaking, wall cracks, Sunken ground, Pipe/ water tank busting and Electrical supply interruption due to tripping. Scheduled maintenance are mostly understood and being carried out periodically for Safety of the building itself and occupants, Long term preservation (enhance life cycle), Enhance asset value, Avoid and minimize disruption.</p> | |
| <p>SHORT-TERM (1 – 2 YEARS) MAINTAINANCE COST:</p> <p>R 45 000 (corrective maintenance).</p> | <div data-bbox="1339 252 2024 593"> </div> <p>GENERAL SCHEDULED MAINTENANCE PLAN FOR BUILDINGS</p> <ul style="list-style-type: none"> Monthly / Annually – Annual checking of electrical equipment by professional trades people, Annual pest control treatment, Monthly test of alarm systems and smoke detectors, Monthly filter checks and cleaning for air conditioning unit, Annual inspection of ceilings, floors, paving, plumbing, internal painting, door hinges, hooks and locks. Every two years – Replace of glass where necessary and powder coated finishes applied where necessary. Every five years – Internal painting. Every ten years – External painting, Replacement of floor coverings, Replacement of guttering and Replacement of electrical wiring. Every twenty-five years – roof refurbishments / replacement. <div data-bbox="1328 715 2024 1082"> </div> |
| <p>MEDIUM-TERM (5-10 YEARS) MAINTAINANCE COST:</p> <p>R 75 000 (schedule maintenance)</p> | |
| <p>LONG-TERM (25 YEARS) MAINTAINANCE COST:</p> <p>R 100 000 (schedule maintenance including roof refurbishment)</p> | |