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1. INTRODUCTION AND BACKGROUND

1.1. Background and need for project.

The Western Cape Provincial Government believes that economic development is key to addressing the many challenges facing the Province, and that strategies adopted must subscribe to the paradigm that there cannot be development without economic growth. The Province’s strategic objectives are closely aligned to the national outcomes as encapsulated in the national Medium-Term Strategic Framework (MTSF), particularly in relation to functions (concurrent) which affect the Province.

Accordingly, the Western Cape Government has identified 12 Provincial Strategic Objectives, shown below.

<table>
<thead>
<tr>
<th>12 Provincial Strategic Objectives</th>
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</thead>
<tbody>
<tr>
<td>1. Increasing opportunities for growth and jobs</td>
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<tr>
<td>2. Improving education outcomes</td>
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<td>3. Increasing access to safe and efficient transport</td>
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<td>4. Increasing wellness</td>
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<td>5. Increasing safety</td>
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<tr>
<td>6. Developing integrated and sustainable human settlements</td>
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<tr>
<td>7. Mainstreaming sustainability and optimising resource-use efficiency</td>
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<tr>
<td>8. Increasing social cohesion</td>
</tr>
<tr>
<td>9. Reducing poverty</td>
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<tr>
<td>10. Integrated service delivery for maximum impact</td>
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<tr>
<td>11. Increasing opportunities for growth and development in rural areas</td>
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<tr>
<td>12. Building the best-run regional government in the world</td>
</tr>
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</table>

These PSOs give effect to Government’s development goals and find expression in departmental strategies over the medium-term.

There is growing evidence that the diffusion of ICT is an accelerator of economic growth in a country (studies by the OECD, World Bank, Economic Commission for Africa, etc.). ICT is being identified as a key contributor to productivity growth and offering “opportunities for employment generation, creation of new sources of innovation and enhancement of industrial competitiveness”1.

It is also important to recognise that the Western Cape economy is moving from one based principally around the production and distribution of physical goods to one driven primarily by the production and application of knowledge. As such, the Western Cape is home to many initiatives in the ICT/ Knowledge economy space. For most of these initiatives, the presence of a well-functioning, robust and accessible telecommunications infrastructure is a prerequisite.

However, at present, there does not appear to be a coherent response or framework for the development of a telecommunications infrastructure in the Western Cape that would support and enable these initiatives as well as the drive for economic growth as envisaged in the Provincial strategy. Instead, the Network Readiness Index demonstrates that South Africa is slipping in the international standards.

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1 Economic Commission for Africa
Moreover, the leading countries are accelerating in their capabilities, further widening the gap between South Africa and the more advanced nations. This view was endorsed by the Premier in her 2011 State of the Province Address:

"A growing economy must connect people through transport and technology. We have to learn from places like Kenya where an ICT revolution is driving strong economic growth. To emulate this, we are developing a telecommunications strategy, based on a fibre optic network infrastructure that connects government, citizens and the economy to improve productivity and access to new markets. The World Bank has calculated that the economy of a developing country grows by 1.38% for every 10% increase in broadband penetration. We cannot afford to get left behind."

In response, the Department of Economic Development & Tourism (DEDAT) chose to drive the creation of a broadband framework / strategy which is based on international best practice frameworks and indicators.

1.2. How was the business case determined?
1.2.1. Position paper

The Western Cape Government's initial response and first project action was to develop a policy position paper as a consultative document. This set out a proposed policy position about what the Western Cape Government could do to spread telecommunications infrastructure and affordable access to communications for business and society, and to make sure that this contributes to the Province’s social and economic development goals.

The position paper was then used as a basis for consultation with a cross section of internal and external stakeholders to obtain input and consensus as well as to gauge support for a telecommunications and broadband strategy within the Province.
Unanimous support was received for the prioritisation of the development of a well-functioning, robust, affordable and accessible telecommunications infrastructure for the Province of the Western Cape.

There was a strong view that “less talk and more action” was needed, and DEDAT moved into the development of the strategic framework and the implementation plan. The identified steps are shown in Error! Reference source not found. below.

### 1.2.2. Strategic Vision and Framework

Following the development of the position paper and the consultation with stakeholders, DEDAT then proceeded to construct a strategic framework and vision for where the province should be with respect to telecommunications.

The vision developed was that of “a Western Cape where every citizen in every town and village has access to affordable high speed broadband infrastructure and services, has the necessary skills to be able to effectively utilise this infrastructure and is actively utilising this in their day to day lives to improve productivity and access to new markets”.

The strategic framework was informed by the internationally recognised and respected Networked Readiness Framework, which underlies the NRI (discussed earlier and in more detail in the Strategic Framework document) – ensuring that all initiatives undertaken contribute to boosting the capacity of the Western Cape to fully leverage ICT for increased competitiveness and development. The strategic framework is built on the idea of a catalytic telecommunications environment driving co-ordinated and integrated action across three (3) programme areas viz. Connected Government, Connected Citizens and Connected Economy with three (3) key objectives i.e. the development of infrastructure, ensuring readiness to be able to utilize the infrastructure (skills and services) and driving usage of the
1.2.2.1. A catalytic telecommunications environment for change

The backbone of our proposed strategy is co-ordinated and integrated action to create a catalytic telecommunications environment for change. This requires that vision and leadership be created across all sectors of society. A big bold, unifying goal needs to be created and all sectors of society need to be engaged to align their contributions and activities towards achieving this goal. The policy and regulatory environment must be geared towards creating an environment for change. Various activities by government, business, communities, etc. should be integrated and directed at the creation of the core / strategic infrastructure and services needed. New and novel funding models will have to be developed to secure funding. All forms of funding – government programmes, grants, private sector investments, etc. will need to be leveraged.

1.2.2.2. Connected Government

This programme area relates to government’s role as a user of telecommunications and as an owner of infrastructure. Government’s role as a regulator and policy-maker largely, but not entirely, falls within the programme area relating to creating a catalytic telecommunications environment. One of the key objectives of this programme area is to use Government as a catalyst for the construction of regional and local backbone networks to all areas. The connecting of all provincial and local government public offices, healthcare institutions (clinics, day hospitals, and hospitals), libraries, community centres, schools and other facilities must be used as a key catalyst in developing the telecommunications infrastructure for a connected province. This will achieve the construction of regional and local backbone networks, as well as some of the subscriber access infrastructure. The second relates to undertaking government-led demand aggregation to boost innovation and develop applications, content and hardware services within the regional economy – driving readiness (creation of applications, content and skills). A third relates to the development
and use of e-government, e-healthcare & e-education applications to drive the usage of ICT-based services by the population.

1.2.2.3. Connected Citizens

This programme area looks at connecting citizens with the objectives of building infrastructure, driving readiness and ensuring usage. The initial focus is on building and extending public access to ICT across the entire province as a quick win. At the same time, the ultimate objective is the extension of infrastructure to facilitate service provision to households, and models to achieve this must be explored as part of this programme area. The provision of low cost computing devices and development of relevant local content will also help drive the usage and demand from citizens. Community safety, disaster management and other functions needing communications with citizens should also be integrated into the same infrastructure allowing for the creation of real fully-connected communities. Smart metering initiatives from municipalities should also be leveraged to create a single integrated infrastructure.

1.2.2.4. Connected Economy

This programme area focuses on ensuring that companies are connected to one another and the world. It relates to attracting more investment into the economy and ensuring that companies are competitive on a global scale. The core focus areas relate to:

- Supporting the development of open access network infrastructure and increasing competition in the marketplace.
- Leveraging public infrastructure and investment to reduce the cost of and speed up the deployment of broadband network access across the entire Western Cape – especially in marginalized areas
- Reducing the cost of international connectivity
- Boosting innovation and capability within applications, content and hardware service providers within the regional economy

1.2.3. Short, medium and long-term key goals and targets:

DEDAT recognises that this initiative is a long term programme with multiple dependencies and timelines. The philosophy underlying the entire programme is that infrastructure development is a key catalyst and that Government’s role has to be to facilitate and drive the development of telecommunications infrastructure in the province. The following are high level short, medium and long term milestones for the project from an infrastructure perspective:

Short term (by 2014):

- All government buildings in the Western Cape are connected at a minimum network speed of 10 Mbps.
- Large government buildings and specific targeted industries in the metropolitan area are connected at speeds in excess of 100Mbps via “fibre to the premises”.

Medium term (by 2020):
• Every citizen in every town and village has access to affordable broadband infrastructure at a minimum network speed of 10Mbps.
• Citizens in the metropolitan area have access to affordable broadband infrastructure at network speeds in excess of 100Mbps.

Long term (by 2030):

• Every citizen in every town and village has access to affordable broadband infrastructure at a minimum network speed of 100Mbps.

1.2.4. Priority Projects

With extensive consultation with key stakeholders, a few priority areas and projects were identified which will significantly impact on the telecommunications landscape in the Western Cape, specifically as it relates to government service delivery, education and access of citizens, and economic development.

The priority projects identified were:

• Connected Leadership
• Connected Government
• Connected Schools
• Connected Communities
• Connected Households
• Low Cost Computing Devices
• Connected Business
• Connecting to the World (international connectivity)

1.2.5. Business Case Development

Each of these projects was scoped and terms of references were developed to appoint service providers to develop business cases for each. At a generic level, each investigation considered the following areas

• “To Be” investigation (Where are we going?)

Develop an understanding the Western Cape Government Broadband Telecommunications vision, strategic framework and key initiatives aimed at achieving this vision.

  o Conduct research into best practices across the world.
  o Conduct research into national targets and plans
  o Develop a “to be” vision with achievable targets for public access in the Western Cape

• “As Is” investigation (Where are we now?)

  o Assessment of existing facilities, infrastructure and initiatives in the Western Cape

• Gap Analysis

  o Identify gaps/improvement needed based on the organisation’s imperatives, research and consultants experience

• Strategy Formulation and Business Case development (What will we do?)

  o Develop a strategy for how the identified gaps should be filled.
o The strategy/ business case was to include:
  - A feasibility study of the proposed project aimed at objectively and rationally uncovering the strengths and weaknesses of the proposed project, opportunities and threats as presented by the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest term, the feasibility study must evaluate value to be attained vs. cost required to determine whether the project should be recommended or not. As a minimum, the following aspects need to be addressed in the feasibility study:
    - Technology and system feasibility
    - Economic and Financial feasibility
    - Legal feasibility
    - Operational feasibility
    - Timeframe feasibility
  - Risk analysis
  - A legal scan of possible obstacles to implementation and ways to overcome these
  - Operating model, options analysis and recommendations
  - Detailed costing analysis of the necessary infrastructure and services required
  - Cash flow model over 10 years showing budget required for implementation
  - Funding sources and proposed mix e.g. banks, institutional investors, industry, government
  - Identification of key partners for implementation and levels of interest and appetite
    - Development of Project Plan & Budget (What will we do?)
      - Should the feasibility prove to be positive, a project implementation plan for the design, implementation and support of the required infrastructure and services was developed. This included:
        - Key tasks required to implement the project, timeframes, resources and dependencies.
        - Estimated budget for implementation and support
The ultimate outcome of the investigation was the development of a business case for the priority project. The business cases involved in-depth analysis of each project to determine the project’s viability, impact, implications and operating models. A project implementation plan and budget was developed as part of each business case. These project plans were then analysed, synthesised and integrated into a master implementation plan and roadmap for broadband in the Western Cape – which is this document. The priority projects and the overall process are graphically represented below.
2. **SITUATION ANALYSIS**

2.1. Provincial Strategic Objectives

As discussed in the introduction, the Western Cape Provincial Government believes that economic development is key to addressing the many challenges facing the Province, and that strategies adopted must subscribe to the paradigm that there cannot be development without economic growth. Accordingly, the Western Cape Government has identified 12 Provincial Strategic Objectives (PSO).

Broadband is a KEY enabler of the Provincial Strategy and provides linkages to all of the PSOs. This is described below.

<table>
<thead>
<tr>
<th>Provincial Strategic Objectives</th>
<th>Relevance and rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PSO 1: Increasing opportunities for growth and jobs</strong></td>
<td>Direct jobs will be created during the creation and maintenance phases of building the provincial backbone network, the building of the mesh network and the various pilots. Many studies by organisations such as the World Bank and OECD have shown a strong correlation between investment in broadband, an increase in broadband penetration and resultant economic growth. Hence there is that expectations that indirect job creation and employment will be observed.</td>
</tr>
<tr>
<td><strong>PSO 2: Improving education outcomes</strong></td>
<td>Improved connectivity to schools will allow for more reliable and efficient administration of schools, FETs and tertiary education facilities. Concepts such as remote curriculum and content delivery can become a reality. This has been recognised by the WCED who are actively pursuing projects to connect all schools across the province.</td>
</tr>
<tr>
<td><strong>PSO3: Increasing access to safe and efficient transport</strong></td>
<td>Improved communications between the various transport offices and facilities will allow for improved licensing and other administration of transport. Since many of the proposed routes follow the provincial roads, increased use of remote speed cameras, average speed systems and CCTV will improve visibility of road usage. Integration of various systems is made possible through broadband connectivity. Mesh networks will improve and offer new possibilities. For example, systems that provide real time bus timetables can be economically deployed using wireless mesh as the communications bearer.</td>
</tr>
<tr>
<td><strong>PSO4: Increasing wellness</strong></td>
<td>The Department of Health is expected to be the largest long-term beneficiary of the project. Improved administration for patient management will increase responsiveness and cut costs. Concepts such as telemedicine and telehealth can be implemented allowing, for example, centralised review of X-rays. Again, broadband is the cornerstone for such advancements.</td>
</tr>
<tr>
<td><strong>PSO5: Increasing safety</strong></td>
<td>Improved communications for the Department of Community Safety and the Department of Transport &amp; Public Works will allow for new opportunities in public safety. The availability of more and better resources for the Department of Local Government and the Disaster Management facilities will also improve the overall safety of citizens across the Western Cape.</td>
</tr>
</tbody>
</table>
Would also allow for costly cameras to be easily redeployed to crime hotspots.

| PSO6: Developing integrated and sustainable human settlements | The availability of provincial backbone networks will mean that more communities are "connected" and "on net". This has impacts in terms of where people work and live. Also supports concepts like telecommuting, work from home, driving local economic development, etc. to integrate distant communities into global information economy. Place becomes more irrelevant. |
| PSO7: Mainstreaming sustainability and optimising resource-use efficiency | Design ensures that reuse of assets and facilities is maximised. Components of the project such as the duct infrastructure will have a lifespan of, perhaps, 50 years or more. Co-ordination and infrastructure sharing is a key objective – reduces environmental impact and maximises resource usage. Telecommuting, increased digitisation, etc. reduces carbon footprint |
| PSO8: Increasing social cohesion | Increased communications channels, increased opportunities for dialogue. Promotes inclusivity and access to opportunities. Place becomes more less important |
| PSO9: Reducing poverty | See 1. Also links to 11. A key part of the project is to spread growth and development across the entire province. If Western Cape Government does not do this, no one else is |
| PSO10: Integrated service delivery for maximum impact | See PSO 12 below |
| PSO11: Increasing opportunities for growth and development in rural areas | See 1. Also links to 11. A key part of the project is to spread growth and development across the entire province. If Western Cape Government does not do this, no one else will |
| PSO12: Building the best-run regional government in the world | True integrated service delivery and “no wrong door” strategies is impossible without integrated ICT systems. Provincial wide broadband is the key enabler of integrated systems and processes across the province. Will allow for the driving of efficiency, effectiveness, increased governance and accountability to improve service delivery across the province – at all levels. |

An extensive situational analysis (“as is”) for each project area was undertaken as part of the business case development. This will not be repeated in this document. However key finding in each of the areas will be discussed below.

2.2. Economic Development

From an economic development perspective, South Africa is slipping – and slipping very fast – even on the African continent. Our research highlights just how fast things are changing on
the African continent. This was done by contrasting the situation on the continent less than 2 years ago (when the position paper was developed), to the situation now.

This indicates the rapid growth in internet penetration in African countries. It also shows how Africa is fueling the Internet growth in the World. In the last 2 years, internet penetration in Africa and the World has grown by 5%. In Nigeria, it grew by 33%, in Egypt by 8%, and in South Africa by 2%. Clearly the current approaches in South Africa are not working and something different urgently needs to be done.

### 2.3. Connected Government

#### 2.3.1. Locations of Government Facilities

The locations of the Western Cape Government facilities were captured and plotted using the GoogleEarth GIS system. Over 8,000 facilities were identified and plotted to show the spread and relative density of facilities across the Western Cape.

<table>
<thead>
<tr>
<th>Datapoints captured in the GIS system</th>
<th>Number of facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Health</td>
<td>627</td>
</tr>
<tr>
<td>WCED</td>
<td>3,090</td>
</tr>
<tr>
<td>Department of Transport &amp; Public Works</td>
<td>216</td>
</tr>
<tr>
<td>Department of Agriculture</td>
<td>88</td>
</tr>
<tr>
<td>Department of Social Development</td>
<td>60</td>
</tr>
<tr>
<td>Department of Culture and Sport</td>
<td>76</td>
</tr>
<tr>
<td>SAPS</td>
<td>180</td>
</tr>
<tr>
<td>SITA</td>
<td>451</td>
</tr>
<tr>
<td>Department of Justice</td>
<td>102</td>
</tr>
<tr>
<td>Provincial sites</td>
<td>1,666</td>
</tr>
</tbody>
</table>
The figure below shows a snapshot of the findings in graphical format. Note that not all the points are unique (i.e. there is some overlap) and there are at least 4,000 unique points across the Western Cape.

Blue circles are schools, red crosses are health facilities, yellow circles are other Western Cape Government properties. Icons for SAPS stations and other national and provincial facilities are also shown.

The research undertaken shows that government facilities are often co-located, or located in very close proximity to each other, yet they are connected independently, have different systems; do not share infrastructure, support, etc. This leads to duplication of expenditure and sub-optimal usage of public funds (i.e. inefficient and very expensive). In addition, the levels of sophistication of ICT tools and applications utilised varies vastly – in some instances because of cost or skills, but also significantly because the infrastructure does not exist. This means that processes are largely paper-based, which is labour-intensive, prone to error and means that information cannot be shared easily, which prevents effective and consistent service delivery across the province.

2.3.2. Gap: Network speeds (current vs. desired)

The Western Cape Government’s Centre for e-Innovation (CeI) administers the data requirements of the 13 provincial departments in a close relationship with SITA. SITA
manages links to around 450 facilities across the Western Cape. The majority (over 95%) of these links are 256kb/s or other sub-2Mb/s Telkom Diginet links which fall way below the access speeds envisaged by the Western Cape Government. The move to fibre-based links in the Cape Town CBD is encouraging. Today, less than 20 Western Cape Government sites, around 50 City of Cape Town sites, and a total of around 50 municipal sites have access to services at true speeds of 10Mb/s or more. Hence the gap is around 97%.

Following on from the above, it is clear that only through some form of intervention will the nearly 100 hospitals, 300 clinics and over 1,500 schools in the Western Cape gain broadband access to allow for telemedicine and remote education to become a reality.

2.3.3. Telecommunications budget: Western Cape Provincial Government

The overall provincial current spend on data and telecommunications is approximately R200m per annum. Considering the spread over the 13 departments, the DotP and Health are the main spenders, together accounting for more than two thirds of the spend. These can be attributed to:

- SITA Data Lines – this is almost exclusively allocated to the DotP (CeI).
- Telephone usage – this is almost dominated by the Department of Health.

2.3.4. Telecommunications budget: Western Cape Municipalities

In 2009/10, it was found that municipalities spent approximately R175m pa on telecommunications, the bulk of which is attributed to the City of Cape Town, who at R117m spent approximately two thirds (66.9%) of the overall amount.

The research also found that nearly all of the Western Cape municipalities have considered plans to build their own telecommunications network, with nearly two thirds of the local and district municipalities having already rolled out some infrastructure. However there were various problems with these networks including limited co-ordination, a lack of standards, varying degrees of sophistication and limited prospects of inter-operability, in addition to financial constraints. There was wide scale support for migration onto a Western Cape government network by the municipalities.

2.4. Connecting Communities

The research found that public access is a very important tool to provide poor people with access to technology. It is being used extensively in developing countries and developed countries. Even countries like Singapore are still investing in public access as it remains an important tool to connect citizens of a country.

Based on the research and best practice, the project concluded that between 1500 and 2700 telecentres would be needed to effectively serve a population of the size in the Western Cape. This would put us on par with countries like Brazil. Based on the National target of Public ICT Access within a 2 km radius of anyone by 2019, even more than this is required.

However this is clearly not achievable in the short term. The project analysed the financials and the amounts were not feasible. The project felt that scarce funds should rather be spent on the backbone network construction, and a smaller set of telecentres done – with a
sustainability model. If this proves successful, it can form the basis for further rollout, with strong links to job creation and entrepreneurship.

The Provincial approach is therefore a phased one, to ensure that all communities have access to standardised public ICT facilities.

- **Phase 1:** ensure that there is at least one public ICT access facility in every ward by 2014, so all communities are serviced.
  - 386 wards in total with 110 (density 32 232) in the metro and 276 (density 6 051) outside the metro
  - Gap is approximately 240 facilities, which translates into a delivery programme of 10 new sites per month. This represents a 60% gap
  - Cape Town - already well positioned with Smart Cape facilities in all City libraries (97). Mainly 4 unit facilities.
  - Roll out facilities to wards where no public access exists and standardise existing facilities to new recommended standard
  - Consider expanding number of units in certain existing facilities (considering high density per ward).
  - Where possible, delivery should follow connected schools and connected government to leverage infrastructure
- **Phase 2:** consider expanding to Voting Areas within wards, to progress towards the national target. Should be demand driven.

2.5. Connecting Households

Availability and affordability are still challenging barriers for households to access broadband. Although the Western Cape has the highest internet penetration of all nine of South Africa’s provinces, it still has a very low penetration when compared to that of other nations.

In the diagram below, the spread of colours/shades across the Western Cape Province shows the differences in availability of ICTs between the various municipalities. The lighter colours / shades for the coastal municipalities indicate a higher ICT penetration and contrast strongly with those of the hinterland that have the darker shading and correspondingly lower ICT penetration.
Darker colours or shades indicates lower availability of ICT facilities and hence a wider ICT gap.

As can be seen below, over 75% of individuals in the Western Cape do not have access to internet in their homes, and of those a significant percentage are making use of their cell phones to connect to the internet\(^2\).

In addition, the figure below shows that that within Cape Town and its surroundings areas, the penetration and distribution of household internet varies greatly. Gugulethu and Mitchells

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\(^2\) Source: AAMPS, 2010
Plain have the highest number of households yet they are the most underserviced internet areas, whereas the Southern Suburbs has the highest penetration and distribution of internet.

2.6. Connecting Business Gap

Businesses in the Western Cape experience far lower broadband speeds and face far higher broadband costs than many of their international competitors, impacting on their overall competitiveness and strategic possibilities.

Research has uncovered that South Africa ranks 106th in the world in terms of broadband speeds. In other words, in comparison to countries like South Korea, ranked 2 and with broadband speeds of 31.44Mbps and costs of $3.66 Mbps, South Africa has broadband speeds of 2.81Mbps at a cost of $38.87Mbps. This contributes to making South African companies highly uncompetitive.
It is therefore a dual issue of both cost and infrastructure, since even with the lowering of costs; the transactional speeds remain unable to keep up with the international pace. This plays out into reduced competitiveness for businesses, in particular for the highly data-intensive sectors. For example, film & animation data transfer costs in the Western Cape could be as much as R1m per project, on a R10 – R20m project. Industry views are that their competitor locations data transfer costs are negligible in comparison.

The absence of affordable and high speed broadband also inhibits the ability of businesses to tap into the potential benefits offered by cloud computing. These benefits include the following:

- Direct cost savings – less spending on IT hardware and software, maintenance, administration time, less office space required
- Can be used off multiple devices, therefore facilitating productivity
- Quickly scalable services and Quick start-up (no need to wait for hardware or software purchasing and installations)
- Productivity improvements – faster operations and the opportunity to always use the latest technology (technology risk is transferred to the service provider)
- Potential for highly mobile workforce / working environment – anywhere, anytime, and less office space
- Increased scope for collaboration with partners and clients, working off common platforms
- Greater scope for internationalisation – e.g. file transfers, client interaction
- New product and service offerings become possible
- Improved disaster recovery capabilities (as most facilities are not on-site)
- Some argue it is greener, as equipment and power are used more optimally with less duplication
2.7. International connectivity: Precedents and bold action

It is also interesting to note that a precedent has already been achieved in terms of the benefits of aggregating demand for international connectivity by Tenet. This demonstrates what is possible with a bit of vision and bold action – even within a restrictive telecommunications environment.

The Tertiary Education and Research Network (TENET) is a Non-Profit-Company which operates a wide area network connecting 120 campuses of 53 educational and research institutes in South Africa. The network connects to the South African National Research Network (SANReN), Telkom and Neotel networks. By aggregating the demand across these institutions, TENET was about to negotiate an IRU (Indefeasible Right of Use) for access to the cable for 20 years for a sum of US$20 million which was payable upon commissioning. TENET was able to secure a loan from the DBSA (Development Bank of South Africa) and pay for the IRU. TENET calculated that it could pay back the loan amount in less than six years and still enjoy access to the cable for the balance of the 20 year life of the cable.

There has been a dramatic performance improvement, and corresponding cost reduction, that is possible within a relatively short time.
3. PROJECT OBJECTIVES AND OUTPUTS

This initiative is a long term programme with multiple dependencies and timelines. The philosophy underlying the entire programme is that infrastructure development is a key catalyst and that Government’s role has to be to facilitate and drive the development of telecommunications infrastructure in the province. When the strategic framework was developed, certain targets were proposed for 2014, 2020 and 2030. Based on the business case development, these targets (mainly the 2014 targets) have had to be revised slightly based on what is realistically possible. The current targets are still very aggressive but take into account the current realities. The following are high level short, medium and long term milestones for the Western Cape broadband programme from an infrastructure perspective:

Short term (by 2014):

- 70% government buildings & 100% of public schools connected.
- All communities have access to public ICT facilities (in every ward)
- Large government buildings and specific targeted industries in the metropolitan area are connected via “fibre to the premises”.

Medium term (by 2020):

- Every citizen in every town and village has access to affordable broadband infrastructure.
- Citizens in the metropolitan area have access to affordable broadband infrastructure at network speeds in excess of 100Mbps.

Long term (by 2030):

- Every citizen in every town and village has access to affordable broadband infrastructure at a minimum network speed of 1000Mbps.

It is important to note that the national government targets are:

- Universal broadband access by 2020
- Public ICT Access within a 2 km radius of anyone by 2019

The broadband programme consists of 8 core projects which are designed to give effect to these targets. A brief synopsis of the deliverables within the 8 core projects follows.

| 1. Connected Leadership | Establish the Broadband Advisory Council |
The | Establish the Broadband Programme Office |
The | Manage initial set up of SPV & Direct ensuring integration & synergy across the province and |
| 2. Connected Government | Part 1: Build Provincial backbone  
Phase 1, Phase 2 & Phase 3  
Part 2: Connect government facilities (via building municipal infrastructure) |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 3. Connected schools     | Connect all schools in by 2014  
Utilise schools network as a foundation for connecting other government facilities & for connected communities |
| 4. Connected Communities | Phase 1: ensure that there is at least one public ICT access facility in every ward by 2014, so all communities are serviced. |
| 5. Connected Households  | Create a wireless mesh networks as a “last mile” open access network connecting all households in Khayelitsha/ Mitchells Plain (Phase 1) and Saldanha (Phase 2) |
| 6. Low cost computing    | Seeding the environment with low cost computing devices (approximately 10,000 pa)  
Refurbishment and pilot other low cost devices (esp. in schools)  
Institute an E-Waste programme |
| 7. Connected Business    | Connecting of businesses directly into the City’s fibre backbone  
Creating high speed “cloud based” services hub |
| 8. Connecting to the world | Reduce international bandwidth costs by using government as a demand aggregator & anchor client |
4. CONSOLIDATED IMPLEMENTATION STRATEGY

Each of the projects that make up the Broadband Programme (with the exception of the Connected Leadership project) have detailed business cases which explore all aspects of the projects with analysis, recommendations, project plans, etc.

4.1. Timelines

The consolidated project plan with timelines and significant milestones is reflected below.

A more detailed GANTT chart for the overall programme is in Annexure A.

This snapshot of the consolidated project plan represents activities over the next 4 years. It reflects that it will be a very busy 4 years, with most of the activity in the first 2 years. The large infrastructure build project is a medium term project, with the big infrastructure development being completed by 2016. The infrastructure for most of the other projects – telecentres, wireless mesh, connected schools, connected businesses, etc. will be completed by March 2014.

4.2. Institutional model

A ring-fenced special purpose vehicle (spv) will be needed for the implementation of this programme. The project looked at various models and concluded that the BWired model, which has already been approved by National Treasury, was something that could be built on.
4.2.1. The BWired Case Study

The BWired City of Johannesburg broadband project is the largest metro/municipal project in the country, costing in the region of R4.185bn. This project is of the same potential scale as the PGWC project. This project received National Treasury approval but is neither a conventional PPP nor a Public Entity but rather a Special Purpose Vehicle (SPV) approved under Section 33 of the MFMA.

It is a 15 year contract consisting of a 3 year build project and a subsequent 12 year run project. This is a “Build-Operate-Transfer BOT” model with the assets being transferred to City of Johannesburg after 15 years. An extension option is included. The fully capitalised cost of the build and start-up costs was R1bn.

The funding model is based on a “current cost replacement” basis where future services are procured per annum for a lesser amount than that currently spent on telecommunications. The City of Johannesburg used the motivation that “it does not cost anything – in fact it saves the city money”. No socio-economic study was conducted. The current aggregated “demand/expenditure” per annum by the city was calculated at R382m pa and the fee to BWired is fixed at R279m and thus a “saving” was motivated and accepted by treasury.

Key to this model is that it was approved by commercial lenders who lent the enterprise R1bn and thus indicated a “sound funding model” for the capital providers. Interestingly, the City of Johannesburg spent R152m in “start-up costs” for this network which was capitalised into the business case.

Therefore the essence of the BWired business model is explained as follows:

- The City of Johannesburg pays R279m pa (off take) to Ericsson as OPEX for 15 years (R4.185bn). This is a minimum amount that CoJ can spend but not an upper amount. This fee is considerably less that the R382m pa that they currently spend on telecommunications services. (The figure of R382m pa is vastly inflated however on analysis)

- The City “Transitions R279m of “existing” services to the network. The fee to Ericsson is a minimum fee whether or not any services get transitioned.
Ericsson cedes the agreement to the Bwired SPV

The Bwired SPV sources commercial funding of R1bn with the R279m pa off take agreement as security. This is used to build the network

Bwired provides the CoJ with specified minimum services.

Bwired pays a “royalty” to the CoJ of income earned from external non-CoJ clients.

Bwired firstly serves the CoJ and then offers services to the external market (but not on an OPEN ACCESS basis)

1. BOT over 15 years with transfer of assets to the CoJ in year 15.

4.2.2. Western Cape Government Potential Business Model and Key Role Players

It is proposed that the Western Cape Government consider creating a ring-fenced special purpose vehicle (spv), similar to the BWired model.

This entity will primarily be responsible for utilising Government as a catalyst for the creation of affordable provincial wide broadband network infrastructure and services by

- Aggregating government infrastructure, complimenting it with private sector infrastructure, and extending where necessary
- Aggregating Government demand and providing services to Government on an integrated basis.
- Operating as an Open Access Network Service Provider by making the aggregated backbone and access infrastructure available to the private sector on an open access basis.
- Acting as a Wholesaler of provincial backbone and access network infrastructure. Access network includes:
  - Fibre to the premises as proposed by the “Connecting Business” project.
  - Wireless mesh networks proposed by “Connecting Household” and “Connecting Business.” SPV will play role of Exchange Management operator (ExMO) for the wireless mesh.
    - Wholesaler of spare international capacity to targeted industry sector as envisaged in Connecting Business. It will operate as a wholesale open access ISP.

This entity would not provide services to private businesses and end users. The entity will enable the private sector to provide these services. The model is illustrated below:
4.3. Stepped Approach

A 3 step approach, linked to the funding approach, is proposed:

4.3.1. Step 1: Startup activities (Broadband Programme Office)

- Set up Broadband Programme Office to get the programme off the ground.
- Drive the creation of the Broadband Leadership Council
- Start and co-ordinate initial programmes (Schools connectivity, wireless mesh, connecting PGWC building, connecting communities, etc.), advocacy
- Investigate & setup SPV/PPP.
- Funded by PGWC MTEF funding

4.3.2. Step 2: Migrate to SPV/PPP

- SPV based on cost replacement business case motivation.
- Also leverage EPWP and Municipal Contributions. Funded on the basis of long term contact from PGWC.
- Drive the creation of Provincial Fibre backbone (Phase 1 & Phase 2)

4.3.3. Step 3: Leveraging Private Sector funding

- Incorporate SPV into either a Public Entity or PPP if required.
- A Transaction Advisor (TA) must be appointed with Treasury.
- Private sector commitment added to the funding mix – increased capital leverage for Phase 3.
### 4.4. Total Consolidated Project Budget (Capex & Opex)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Connected Leadership</td>
<td>R 30</td>
<td>R 33</td>
<td>R 36</td>
<td>R 40</td>
<td>R 44</td>
<td>R 48</td>
<td>R 53</td>
<td>R 58</td>
<td>R 64</td>
<td>R 71</td>
</tr>
<tr>
<td>Connected Government Provincial Backbone (Fibre)</td>
<td>R 84</td>
<td>R 240</td>
<td>R 327</td>
<td>R 441</td>
<td>R 465</td>
<td>R 116</td>
<td>R 115</td>
<td>R 114</td>
<td>R 114</td>
<td>R 113</td>
</tr>
<tr>
<td>Access Network (Municipal network support)</td>
<td>R 99</td>
<td>R 194</td>
<td>R 195</td>
<td>R 194</td>
<td>R 147</td>
<td>R 146</td>
<td>R 147</td>
<td>R 146</td>
<td>R 147</td>
<td>R 146</td>
</tr>
<tr>
<td>Connected Communities</td>
<td>R 36</td>
<td>R 36</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connected Households</td>
<td>R 15</td>
<td>R 30</td>
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<td></td>
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<tr>
<td>Low Cost Computing Devices</td>
<td>R 10</td>
<td>R 10</td>
<td>R 10</td>
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<td></td>
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<tr>
<td>Connected Business</td>
<td>R 10</td>
<td>R 10</td>
<td>R 7</td>
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<tr>
<td>Connecting to the World</td>
<td>R 10</td>
<td>R 24</td>
<td>R 29</td>
<td>R 28</td>
<td>R 27</td>
<td>R 26</td>
<td>R 24</td>
<td>R 24</td>
<td>R 24</td>
<td>R 25</td>
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<tr>
<td>TOTAL</td>
<td>R 294</td>
<td>R 576</td>
<td>R 604</td>
<td>R 702</td>
<td>R 683</td>
<td>R 336</td>
<td>R 339</td>
<td>R 343</td>
<td>R 349</td>
<td>R 355</td>
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</tbody>
</table>

It is important to note that this reflects what it would cost. This is not necessarily the budget that needs to be allocated. If a financing (spv) route is pursued, then the budget implication is between R200 to R250 million per annum for a period of 10 years.

Other activities & funding related to broadband telecommunications development are reflected below. These are current activities that are separately budgeted for at this stage i.e. they are not included in the figures above.

<table>
<thead>
<tr>
<th>Activity</th>
<th>FY2012</th>
<th>FY2013</th>
<th>FY2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting CEI buildings to City fibre (CEI funded)</td>
<td>R 19</td>
<td>R 19</td>
<td>R 19</td>
</tr>
<tr>
<td>Connected Schools (WCED Funded)</td>
<td>R 35</td>
<td>R 35</td>
<td>R 35</td>
</tr>
<tr>
<td>City fibre (funded by City)</td>
<td>R 70</td>
<td>R 45</td>
<td>R 45</td>
</tr>
</tbody>
</table>
4.5. Funding model
4.5.1. Cost replacement Rationale

The funding model is based on cost replacement as in the case with BWired.

Using the Bwired investment ratios as a benchmark, we can see the following off-take estimates and their consequent current value investment levels:

- R50m off take @ 15 Years @ 10% = R360m (R205m Infr, R175m Operate)
- R100m Off take @ 15 years @ 10% = R760m (R410m Infr, R350m Operate)
- R200m Off take @ 15 years @ 10% = R1.52bn (R822m Infr, R700m Operate)

PGWC and Municipalities are currently spending approx. R375 million per annum on Telecoms (PGWC - R200 Million, Municipalities - R175 Million). The business case suggests that a R250 million off-take should be expected (i.e. cost replacement over a period of time). Therefore, calculating over a 10 year period at 10% pa the total investment based on a cost-replacement model is R1.535bn. The remainder of the funding required will need to be sourced from the private sector. It is important to note that this funding will only be required for Phase 3 – which is the building out of the network, and the building in of redundancy – specifically to service the needs of the private sector and extend services to end users.

4.5.2. New investment needed initially

The cost for the project, as reflected earlier, is

<table>
<thead>
<tr>
<th>Cost in Millions</th>
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</tr>
</thead>
<tbody>
<tr>
<td>R 294</td>
<td>R 576</td>
<td>R 604</td>
<td>R 702</td>
<td>R 683</td>
<td>R 336</td>
<td>R 339</td>
<td>R 343</td>
<td>R 349</td>
</tr>
</tbody>
</table>

However, this is not necessarily the budget that needs to be allocated. If a financing (spv) route is pursued (as is being recommended), then the budget implication is R250 million per annum for a period of 10 years as reflected below:

<table>
<thead>
<tr>
<th>PGWC Budget Requirement in Millions</th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>R 294</td>
<td>R 250</td>
<td>R 250</td>
<td>R 250</td>
<td>R 250</td>
<td>R 250</td>
<td>R 250</td>
<td>R 250</td>
<td>R 250</td>
<td>R 250</td>
</tr>
</tbody>
</table>

It is also important to understand that the cost replacement occurs over time – as the new infrastructure is built and commissioned. Therefore if we only look at the Provincial R200 million, and new funds required, we see that new costs reduce over time:

|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|

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4.5.3. Breakeven Analysis (Financial Breakeven)
4.5.3.1. Connecting Government:

This is pure financial breakeven with very conservative assumptions.

Essentially payback will occur in about 10 years; thereafter it becomes an income generator with economic breakeven coming much sooner.
4.5.3.2. International Connectivity:

International connectivity has a projected breakeven of 2 years.

Note: The other projects are designed to be opex neutral i.e. they are once-off interventions, with no expectation of return on the initial investment (capital build). However, ongoing operations, maintenance and enhancement should be covered by income generated. These are pilots to test this concept.

4.6. Economic Impact

<table>
<thead>
<tr>
<th>Macroeconomic Analysis</th>
<th>Annual GDP contribution</th>
<th>Cumulative GDP contribution</th>
<th>Direct &amp; indirect Jobs created pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015/16</td>
<td>R2.92 Billion</td>
<td>R8.78 Billion</td>
<td>13136</td>
</tr>
<tr>
<td>2030</td>
<td>R22.95 Billion</td>
<td>R184.6 Billion</td>
<td>33112</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost Benefit Analysis (CBA)</th>
<th>NPV (Rm)</th>
<th>BCR</th>
<th>IRR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1: Connected Government - Public and private sector benefits</td>
<td>17 494</td>
<td>7.5</td>
<td>42%</td>
</tr>
<tr>
<td>Project 2: Connected Households - Mitchell’s Plain and Khayelitsha</td>
<td>1 425</td>
<td>14.1</td>
<td>1004%</td>
</tr>
<tr>
<td>Project 2: Connected Households - Saldanha Bay</td>
<td>84</td>
<td>6.6</td>
<td>197%</td>
</tr>
<tr>
<td>Project 3: Connected Business - Reducing cost international bandwidth to the film industry</td>
<td>374</td>
<td>4.5</td>
<td>215%</td>
</tr>
<tr>
<td>Project 4: Connected Business - Broadband internet &amp; cloud computing services to businesses in the proposed Fringe district</td>
<td>106</td>
<td>12.7</td>
<td>70%</td>
</tr>
</tbody>
</table>
Note: a BCR greater than 1 indicates that the completed project would constitute an economic asset; a BCR less than 1 implies that the project would be an economic liability. The higher the BCR the less risk there is that the proposed investment could turn out to be less than beneficial economically.
5. Conclusion

The extensive research that has been undertaken indicates that this programme is viable. It is cost effective as it leverages future expenses to build economic infrastructure that will take the province into the future. It will position the province well for modernization, efficiency and effectiveness of government – enabling the Western Cape Government to achieve its vision of being the “best run regional government in the world”.

However the true value of this programme is in the economic development benefits and how it increases the competitiveness of the Western Cape bringing us on par with our competitors in the developed world, the developing world and the rest of Africa. It will secure the Western Cape’s relevance in an world economy that is being increasing driven by global networks and broadband connections.

It is a big bold project, but one that is necessary at this stage. The research clearly indicates that current approaches are not working and that South Africa is rapidly sliding down the international indices. More of the same is not going to work if South Africa is to turn the situation around. The Western Cape Broadband programme is a true legacy project that will position the Western Cape for the future, but also light the path ahead for the rest of South Africa.
<table>
<thead>
<tr>
<th>Task Name</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Connected Leadership</td>
<td>Thu 12/03/01</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>2. Project Initiation - Creation of Programme Office</td>
<td>Thu 12/03/01</td>
<td>Fri 1/10/12</td>
</tr>
<tr>
<td>3. Interim Technical Advisory Services to bridge gap until Programme office set up</td>
<td>Mon 12/04/02</td>
<td>Fri 12/06/22</td>
</tr>
<tr>
<td>4. Creation of Project Office Terms of Reference</td>
<td>Thu 12/03/01</td>
<td>Fri 12/03/16</td>
</tr>
<tr>
<td>5. Recruitment and appointment of initial skeleton staff</td>
<td>Mon 12/04/02</td>
<td>Fri 12/06/22</td>
</tr>
<tr>
<td>6. Recruitment of other programme office staff</td>
<td>Mon 12/06/25</td>
<td>Fri 12/10/12</td>
</tr>
<tr>
<td>7. Finding of premises</td>
<td>Mon 12/04/02</td>
<td>Fri 12/04/27</td>
</tr>
<tr>
<td>8. Equipping of project offices including furniture, IT equipment, etc.</td>
<td>Mon 12/04/30</td>
<td>Fri 12/06/22</td>
</tr>
<tr>
<td>9. Programme Office formally open</td>
<td>Mon 12/07/02</td>
<td>Mon 12/07/02</td>
</tr>
<tr>
<td>10. Ongoing Management of Programme</td>
<td>Mon 12/07/02</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>11. Broadband Advisory Council/ Leadership forum: Set up and manage</td>
<td>Mon 12/07/02</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>12. Management and Direct on programme ensuring integration and synergy between projects</td>
<td>Mon 12/07/02</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>13. Appropriate institutional model: Evaluation &amp; setup</td>
<td>Mon 12/07/02</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>14. Advocacy and Lobbying</td>
<td>Mon 12/07/02</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>15. Funding: securing and managing</td>
<td>Mon 12/07/02</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>16. Monitoring &amp; Evaluation</td>
<td>Mon 12/07/02</td>
<td>Thu 16/03/31</td>
</tr>
<tr>
<td>17. Connecting Government</td>
<td>Mon 12/07/02</td>
<td>Fri 16/02/12</td>
</tr>
<tr>
<td>18. Project Initiation/ Startup activities</td>
<td>Mon 12/07/02</td>
<td>Tue 13/01/12</td>
</tr>
<tr>
<td>19. Determination of Phase 1 Scope</td>
<td>Mon 12/07/02</td>
<td>Tue 13/01/12</td>
</tr>
<tr>
<td>20. Compilation of technical and launch plan to include target towns plus products and services.</td>
<td>Mon 12/07/02</td>
<td>Fri 12/08/03</td>
</tr>
<tr>
<td>21. Derivation of generic requirements for optical network and compilation of specifications.</td>
<td>Mon 12/07/09</td>
<td>Fri 12/08/17</td>
</tr>
<tr>
<td>22. Discussions with Municipalities for PoP locations (assume internal to municipal premises)</td>
<td>Mon 12/07/23</td>
<td>Fri 12/08/31</td>
</tr>
<tr>
<td>23. Determination of financing options (PGWC CAPEX for Phase 1 and PPP for Phase 2 &amp; 3)</td>
<td>Mon 12/08/20</td>
<td>Fri 12/09/14</td>
</tr>
<tr>
<td>24. Preparation of EIA tender documentation</td>
<td>Mon 12/08/20</td>
<td>Fri 12/09/14</td>
</tr>
<tr>
<td>25. Compilation of tender documents and internal writing</td>
<td>Mon 12/08/17</td>
<td>Fri 12/10/12</td>
</tr>
<tr>
<td>26. Launch of tenders</td>
<td>Mon 12/10/15</td>
<td>Mon 12/10/15</td>
</tr>
<tr>
<td>27. Tender period</td>
<td>Tue 12/10/16</td>
<td>Mon 12/11/26</td>
</tr>
<tr>
<td>28. Evaluation of tenders</td>
<td>Tue 12/11/27</td>
<td>Mon 12/12/24</td>
</tr>
<tr>
<td>29. Contract negotiations</td>
<td>Tue 12/12/25</td>
<td>Mon 13/01/21</td>
</tr>
<tr>
<td>30. Tender award</td>
<td>Tue 13/01/22</td>
<td>Tue 13/01/02</td>
</tr>
<tr>
<td>31. Startup activities (EIAs, NOC establishment, interconnect agreement)</td>
<td>Mon 12/09/03</td>
<td>Wed 14/05/28</td>
</tr>
<tr>
<td>32. Environmental Impact Assessments &amp; Surveys</td>
<td>Thu 13/01/24</td>
<td>Wed 14/05/28</td>
</tr>
<tr>
<td>36. PGWC NOC Establishment</td>
<td>Mon 12/09/03</td>
<td>Fri 13/04/26</td>
</tr>
<tr>
<td>50. Interconnect agreements (ISP)</td>
<td>Mon 12/16/15</td>
<td>Fri 13/06/07</td>
</tr>
<tr>
<td>62. Phase 1 Project: Establish 5 x PoPs and connect to BBI Network</td>
<td>Mon 12/11/12</td>
<td>Fri 14/03/28</td>
</tr>
</tbody>
</table>
63 Conclude contract with Broadband Infraco
Mon 12/11/12
Fri 13/02/01

66 Prepare for construction of Municipality PoPs
Mon 13/02/04
Fri 13/06/21

75 Construction of fibre access
Thu 13/07/11
Thu 14/01/09

79 Network build out
Fri 14/01/10
Fri 14/03/21

85 Handover activities
Mon 14/02/24
Fri 14/03/28

86 Phase 1 complete
Fri 14/03/28
Fri 14/03/28

89 Phase 2 Project: Establish 26 x PoPs and build out 862kms of fibre
Mon 13/02/04
Fri 14/10/03

90 Definition of Phase 2 Scope
Mon 13/02/04
Fri 13/12/20

92 Project Initiation
Mon 13/12/23
Fri 14/01/03

101 Central Karoo Project (47km of fibre & 2 PoPs)
Mon 14/01/06
Fri 14/04/18

107 Eden Project (282km of fibre & 8 PoPs)
Mon 14/01/13
Fri 14/08/15

114 Overberg Project (168km of fibre & 3 PoPs)
Mon 14/01/20
Fri 14/09/19

121 West Coast Project (63km of fibre & 5 PoPs)
Mon 14/01/27
Fri 14/09/19

128 Winelands Project (296km of fibre & 4 PoPs)
Mon 14/02/03
Fri 14/09/12

140 Project phase completion activities
Mon 14/02/22
Fri 14/10/03

143 Phase 2 complete
Fri 14/03/28
Fri 14/03/28

145 Phase 3 Project: Build out 1571kms of fibre
Mon 14/03/28
Fri 16/02/12

146 Definition of Phase 3 Scope
Mon 14/03/28
Fri 14/12/05

149 Project Initiation
Mon 14/03/28
Fri 14/12/05

155 Central Karoo Project (56km of fibre)
Mon 14/03/28
Fri 15/09/15

161 Eden Project (379km of fibre)
Mon 14/03/28
Fri 15/09/15

167 Overberg Project (114km of fibre)
Mon 15/03/05
Fri 15/10/16

174 West Coast Project (715km of fibre)
Mon 15/03/12
Fri 15/10/16

171 Winelands Project (250km of fibre)
Mon 15/03/19
Fri 15/10/16

177 Handover Activities
Mon 16/02/01
Fri 16/02/12

180 Project complete
Fri 16/02/12
Fri 16/02/12

183 Phase 4 Project: Build out municipal infrastructure
Mon 16/02/12
Fri 16/02/12

185 Connecting Communities
Mon 16/02/12
Fri 16/02/12

186 Stakeholder Management & Marketing
Mon 16/02/12
Fri 16/02/12

188 Project Initiation/ Startup activities
Mon 16/02/12
Fri 16/02/12

211 Analysis, Solution Design & Solution Development
Tue 13/01/22
Mon 13/03/18

213 Solution Deployment
Tue 13/01/29
Mon 13/03/23

215 Post implementation Activities
Tue 13/02/24
Mon 14/01/20

Project: Integrated timelines Plan 2
Date: Fri 12/02/10

Page 2
<table>
<thead>
<tr>
<th>Task Name</th>
<th>Start</th>
<th>Finish</th>
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</thead>
<tbody>
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<td>Project Initiation/ Startup activities</td>
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<tr>
<td>Khayalitsha &amp; Mitchells Plain Backbone network construction</td>
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<td>Wed 13/04/24</td>
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<td>Khayalitsha &amp; Mitchells Plain Wireless Mesh</td>
<td>Wed 13/01/23</td>
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<td>Analysis and Solution Design</td>
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<tr>
<td>Mesh Deployment</td>
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<td>Exchange Management operator (ExMO) setup</td>
<td>Mon 13/06/17</td>
<td>Fri 13/11/29</td>
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<td>Integration of service providers</td>
<td>Wed 13/05/15</td>
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<td>Interconnect agreements (ISP)</td>
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<td>Integrate network capacity into backbone network</td>
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<td>319</td>
<td>Test Services and access</td>
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<td>321</td>
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**Project: Integrated timelines Plan2**
**Date: Fri 12/02/10**

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