Table of Contents

1 INTRODUCTION.................................................................................................................. 4

2 APPLICATIONS.................................................................................................................. 4
  2.1 Licensable Networks ....................................................................................................... 4
  2.2 Land Mobile Radio ........................................................................................................ 4
  2.3 Broadcasting Stations ................................................................................................... 4
  2.4 Backhaul ....................................................................................................................... 4
  2.5 Local Area Networks ................................................................................................... 4
  2.6 Network Operations Centres ....................................................................................... 5
  2.7 Data Centres ............................................................................................................... 5
  2.8 Masts .......................................................................................................................... 5

3 PRINCIPLES FOR THE DESIGN, SITING, CONSTRUCTION AND OPERATION OF
   TELECOMMUNICATIONS FACILITIES........................................................................ 5
  3.1 Principle 1: A Telecommunications facility should be sited to minimise visual impact. .... 5
  3.2 Principle 2: Telecommunications facilities should be collocated wherever practical. ....... 6
  3.3 Principle 3: Health standards for exposure to radio emissions will be met. .................... 6
  3.4 Principle 4: Disturbance and risk relating to siting and construction should be minimised. .... 6

4 GENERAL REQUIREMENTS FOR INSTALLATIONS............................................................ 7
  4.1 Competence of Installers; .............................................................................................. 7
  4.2 Healthy and Safety; ....................................................................................................... 7
    4.2.1 Prevention of accidental electric shock ................................................................. 7
    4.2.2 Protection against surge and lightning .................................................................. 8
  1.1.1 Public Safety ............................................................................................................ 8
  4.3 System Reliability; ....................................................................................................... 10
    4.3.1 Reliability of power supply .................................................................................... 10
    4.3.2 Survivability of the system ................................................................................... 10
    4.3.3 Monitoring system ................................................................................................ 10
  4.4 Conformity to wiring standards; .................................................................................. 10
    4.4.1 Circuit Protection ................................................................................................. 10
    4.4.2 Cable Colour codes .............................................................................................. 11
    4.4.3 Size of electrical conductors ............................................................................... 11
    4.4.4 Trunking of cables ............................................................................................... 11
    4.4.5 Segregation of cables .......................................................................................... 11
4.4.6 Prevention of ground loops ............................................................................. 11
4.5 Environmental Health; ....................................................................................... 12
  4.5.1 Restriction of substances hazardous to health (ROHS) ................................. 12
  4.5.2 Protection against environmental degradation ............................................. 12
4.6 Infrastructure sharing; ....................................................................................... 12
  4.6.1 Co-location support ...................................................................................... 12
  4.6.2 Labelling of installations .............................................................................. 12
4.7 Security; ............................................................................................................ 12
5 REQUIREMENTS FOR INSTALLATION OF OPTICAL FIBRE NETWORKS .......... 12
  5.1 Installation Permit ........................................................................................... 12
    5.1.1 Validity of Installers Certification .............................................................. 13
    5.1.2 Compliance of proposed installation to National Standards .................... 13
  5.2 Installation of aerial fibre .................................................................................. 13
    5.2.1 Pole Types .................................................................................................. 13
    5.2.2 Smart Poles ................................................................................................ 13
    5.2.3 Pole Height ................................................................................................ 13
    5.2.4 Co-location ................................................................................................ 13
    5.2.5 Labelling .................................................................................................... 13
  5.3 Installation of directly buried fibre (Optical Fibre Ground Wires – OPGW) ....... 14
  5.4 Standards for installation of duct fibre ............................................................. 15
  5.5 Sharing of Infrastructure .................................................................................. 15
6 REQUIREMENTS FOR INSTALLATION OF BROADCASTING SITES ............... 15
  6.1 Location of transmission site .......................................................................... 16
  6.2 Conformance to guidelines .............................................................................. 16
  6.3 Types of Masts .................................................................................................. 16
  6.4 Responsibilities of the owner of the mast ....................................................... 16
7 REQUIREMENTS FOR DEPLOYMENT OF NEW TECHNOLOGIES ................. 16
  7.1 Deployment of technology .............................................................................. 16
  7.2 Demonstration and Roll out of Technology .................................................... 17
8 REQUIREMENTS FOR INSTALLATION OF RADIO BASE STATIONS ........... 17
  8.1 Construction Permit ......................................................................................... 17
  8.2 Tower Site considerations ............................................................................... 18
  8.3 Considerations for a new tower ....................................................................... 19
8.4 Responsibilities of the tower owner ................................................................. 19
8.5 Protection of the tower against lightning ...................................................... 20
1 INTRODUCTION

Equipment installation refers to the process or act of making a machine, system, device or electronic communication apparatus ready to be used in a certain place.

Certification of equipment installations is cardinal in that it preventives interference, ensures the health and safety of the general public, prevents environmental degradation, preserves wildlife sanctuaries and historical monument sites, and fosters the availability of networks of national and social importance. It is for his reason that the Statutory Instrument (SI) 6 of 2011 tasks the authority with the responsibility of ensuring that all electronic communications installations conform to set national standards.

All owners of electronic communication networks are required to obtain clearance prior to construction or installation.

These guidelines are not applicable to Small Office Home Office (SOHO) and domestic installations. They are meant to ensure that all systems which are subject to licensing are installed in conformity to standards.

2 APPLICATIONS

The following are some of the systems which require installation clearance. This list might not be comprehensive and will not limit the authority’s mandate.

2.1 Licensable Networks

Any form of electronic communications network which requires a network license issued by the authority.

2.2 Land Mobile Radio

HF, VHF, UHF radio systems, mobile networks and internet service provisioning.

2.3 Broadcasting Stations

Radio, television, cable and satellite.

2.4 Backhaul

Microwave, Satellite and Optical fibre.

2.5 Local Area Networks

Wired or Wireless (WLAN)
2.6 Network Operations Centres

Utility Companies, Service Providers, Network Service Providers, Electronic Communication Transaction Providers

2.7 Data Centres

Server rooms, data recovery centres

2.8 Masts

Poles, Metal Lattice, Guyed Lattice and Locally Fabricated Masts.

The owner of the network infrastructure / installer or service provider shall ensure that all electronic communication equipment used on the network are type approved as stipulated in section 66 of the ICT Act of 2009. Use of a non-type approved component / equipment shall render the installation invalid for installation clearance.

3 PRINCIPLES FOR THE DESIGN, SITING, CONSTRUCTION AND OPERATION OF TELECOMMUNICATIONS FACILITIES

The following four principles must be applied where relevant to the design, siting, construction and operation of any telecommunications facility.

3.1 Principle 1: A Telecommunications facility should be sited to minimise visual impact.

Application of principle

a) On, or in the vicinity of a heritage place, a telecommunications facility should be sited and designed with external colours, finishes and scale sympathetic to those of the heritage place.

b) A telecommunications facility mounted on a building should be integrated with the design and appearance of the building.

c) Equipment associated with the telecommunications facility should be screened or housed to reduce its visibility.

d) The relevant officer of the responsible authority should be consulted before any street tree is pruned, lopped, destroyed or removed.

e) A telecommunications facility should be located so as to minimise any interruption to a significant view of a heritage place, a landmark, a streetscape, vista or a panorama, whether viewed from public or private land.
3.2 Principle 2: Telecommunications facilities should be collocated wherever practical.

Application of principle
a) Wherever practical, telecommunications lines should be located within an existing underground conduit or duct.

b) Overhead lines and antennae should be attached to existing utility poles, towers or other radiocommunications equipment to minimize unnecessary clutter.

3.3 Principle 3: Health standards for exposure to radio emissions will be met.

Application of principle
a) A telecommunications facility must be designed and installed so that the maximum human exposure levels to radio frequency emissions comply with ZAMBIAN HUMAN EXPOSURE STANDARD: ZM.S.101

3.4 Principle 4: Disturbance and risk relating to siting and construction should be minimised.

Construction activity and site location should comply with Zambian environment protection policies and best practice environmental management guidelines.

Application of principle
a) Soil erosion during construction and soil instability during operation should be minimised in accordance with any relevant policy or guideline issued by the Environment Protection Authority.

b) Construction should be carried out in a safe and effective manner in accordance with relevant requirements of the Occupational Health and Safety Guidelines.

c) Obstruction or danger to pedestrians or vehicles caused by the location of the facility, construction activity or materials used in construction should be minimised.

d) Where practical, construction should be carried out during times that cause minimum disruption to adjoining properties and public access.

e) Traffic control measures should be taken during construction.

f) Open trenching should be guarded.

g) Disturbance to flora and fauna should be minimized during construction and vegetation replaced to the satisfaction of the land owner or responsible authority at the conclusion of work.
h) Street furniture, paving or other existing facilities removed or damaged during construction should be reinstated (at the telecommunication carrier’s expense) to at least the same condition as that which existed prior to the telecommunications facility being installed.

4 GENERAL REQUIREMENTS FOR INSTALLATIONS

4.1 Competence of Installers;

a) The authority will consider the competence (qualification) and relevance of the trade of the installers when certifying the installations. All individuals or entities involved in design and installation of electronic communication networks shall be required to hold a valid installers certificate issued by the authority.

b) In respect of other Acts and regulations, all installers must be registered members of at least a professional body.

c) Failure to produce a competence certification of the installer(s) or a member of will automatically constitute a failure of the entire installation.

4.2 Healthy and Safety;

4.2.1 Prevention of accidental electric shock

a) All circuitry of high voltage or current must bear a warning to that effect. This is regardless of whether it is Alternating Current (AC) or Direct Current (DC). This will apply for current sources capable of supplying 100mA or more (Lethal currents).

b) This signage must be placed at a visibly noticeable location and before the intended audience is exposed to the hazard.
4.2.2 Protection against surge and lightning

a) All electronic communications installations must have a system for protection against lightning and surge protection / suppression.

**Surge Protection**

Every power supply to an electronic communication system will be expected to have surge protection/ suppressors for indirect lightning strikes and other disturbances in the power system.

**Lightning protection**

All installations of electronic communication equipment must have protection against direct lightning strikes. This maybe in the form of any of the following, a spike, rod or grounding provided to the highest metallic structure of the installation.

b) Further were the system uses coaxial or ethernet cables to connect to an antenna or other device, the cable must be earth strapped at several intervals before it connects to the equipment and/ or have lightning suppressor(s) installed along the path.

c) The earthing resistance shall not exceed Five (5) Ohms.

d) Power Conditioning

All installations of national and social importance must have a power conditioning system. This conditioning system must be capable of at least correcting over voltages, under voltages. Examples of installations of national and social importance are radio and television stations, ISP networks, radios and alarm systems for security firms, mobile network operators, data centres, and carrier of carriers.

1.1.1 Public Safety

a) Prevention of injuries

The installer must ensure that equipment or infrastructure they set up does not in any way pose a danger to the general public. The danger to be considered is not limited to; injury to members of the public by collapsing of infrastructure or part of, electrocution, risk of lightning by setting up of ungrounded installations, tripping or injury due to carelessly laid out cables.

b) Abandoning of sites

Where the operator of a site or service wishes to discontinue using the infrastructure, they shall be required to notify the authority at least a month before discontinuation. The owner of the infrastructure will be required to decommission the site within Sixty days of the date of discontinuation.

c) RF Signage
d) Any site with RF emissions shall be required to have a notice to that effect. This should be placed at a visible place and before the target audience is exposed to the danger.

![RF Signage](image)

Fig. 2 Example of a RF signage

e) All feeders and signal lines running on a mast, pole or support structure shall be securely fastened by mechanical clamps.

f) **Approval of mast**

i. All construction of masts shall be subjected to inspections by a civil engineer.

ii. The masts used shall always be galvanized to a minimum of µ85mm.

iii. All masts requiring ground re-enforcement shall be built in a concrete foundation whose mixture shall be of strength in excess of 20 MPa.

iv. All masts shall have a lightning spike / rod for purposes of protection against direct lightning strikes. These shall extend for at least a meter above the mast.

v. The installer shall ensure that all structures requiring civil maintenance such as tower painting and torqueing are done in conformity with the manufacturer’s specifications.
g) **Fire prevention**

All communications infrastructure shall deploy the use of the following for purposes of detecting, stopping and preventing fire; Smoke detectors, fire extinguishers and fire retardant materials.

i. Where fire extinguishers are used, the correct type corresponding to the environment to be protected shall be used. This shall be powder, carbon dioxide, and water.

ii. For pressurized fire extinguishers, the owner of the facility shall ensure that the fire extinguishers are properly serviced and in a usable manner. The service stickers bearing the date shall always be affixed to the fire extinguisher.

h) **Disposal of waste**

The owner of the facility shall ensure that a procedure for handling e-waste is in place. Only safe methods of disposal shall be acceptable.

4.3 **System Reliability;**

4.3.1 **Reliability of power supply**

   a) All installations of national and social importance must have standby power or a redundancy power system. This may be a generator, battery bank, solar system etc. This back up system should be capable of sustaining the system for at least Three (3) hours.

   b) Whenever the generator is used as a backup power supply in a built up area. The installer shall ensure that the generator is fit with sound attenuators

4.3.2 **Survivability of the system**

   Were the installation is considered to be of national and social importance. The installer shall be required to demonstrate the system’s ability to survive from failures. This might be hot standby, restoration with or without human intervention.

4.3.3 **Monitoring system**

   Were the system has nodes in unmanned areas or is spread about in a wide area or geographical locations. The installer maybe requested to have in place a network monitoring system.

4.4 **Conformity to wiring standards;**

4.4.1 **Circuit Protection**

   All electronic communications equipment shall have an electrical power supply system which utilizes circuit breakers for purposes of protection against over current.
4.4.2 Cable Colour codes
The installer must ensure that the colours of the cables used are in conformity to the national standard.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue / Black</td>
<td>Neutral or Negative</td>
</tr>
<tr>
<td>Red / Brown</td>
<td>Live or Positive</td>
</tr>
<tr>
<td>Green / Green &amp; Yellow</td>
<td>Earth / Ground</td>
</tr>
</tbody>
</table>

For Three (3) phase systems, the following shall apply

<table>
<thead>
<tr>
<th>Colour</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red, Blue, Yellow</td>
<td>Phases</td>
</tr>
<tr>
<td>Black</td>
<td>Neutral</td>
</tr>
<tr>
<td>Bare (For armoured cables only)</td>
<td>Earth / Ground</td>
</tr>
</tbody>
</table>

4.4.3 Size of electrical conductors
All equipment must be wired using conductors capable of handling the maximum rated operating currents. This will be certified by comparing the cross section area of the conductor to the maximum rated current of the equipment. Only Earth strips or multi strand 16mm² cables shall be used for grounding of tall infrastructures.

4.4.4 Trunking of cables
With the exception of armoured cables and feeders, all other cables shall be routed via a conduit, tray or trunking case.

4.4.5 Segregation of cables
Were the cables are not capable of shielding against interference, mutual inductions and do not have proven immunity. The installer shall ensure that signal cables are run in separate trunkings from the power supply cables. As a convention signals trunkings ought to be Orange in colour or shall be clearly labelled so.

4.4.6 Prevention of ground loops
The installer shall ensure that their system is without ground loops. This shall apply even if the installation site is not a shared site.
4.5 Environmental Health;

4.5.1 Restriction of substances hazardous to health (ROHS)
No installation shall be established using any substance which is nationally or internationally declared as being hazardous. Examples of these include but not limited to Chlorofluorocarbons (CFC) refrigerants, lead and mercury.

4.5.2 Protection against environmental degradation
Systems or equipment shall be installed in such a manner that they do not produce byproducts which are detrimental to the environment. Further were waste is produced by virtue of normal operation and maintenance of the system, the installer will be required to demonstrate the ability to safely dispose of the waste produced.

4.6 Infrastructure sharing;

4.6.1 Co-location support
When setting up an installation, the installer maybe required to demonstrate the capability to accommodate another or multiple other systems. Where there are already enough infrastructures to support the requested installation, the authority reserves the right to direct the installer to co-locate.

4.6.2 Labelling of installations
Were the equipment is installed in a public or shared location. The installer shall ensure their equipment is clearly labelled for purposes of easy identification. This shall include nodes, feeders, signal lines and antennas / auxiliary equipment.

4.7 Security;
Each electronic communications network should have a device for protection against unauthorized access. This shall apply to both local and remote electronic access. Further the network security devices shall be capable of storing all unauthorized access attempts.

5 REQUIREMENTS FOR INSTALLATION OF OPTICAL FIBRE NETWORKS

5.1 Installation Permit
No installation and operation of an optical fibre network shall commence without the express permission of the authority. The owner of the network infrastructure / installer shall be required to obtain approval from the authority at least a month prior to commencing of installation. The authority shall be required to approve the surveyed route which the fibre should take. In evaluating the application for installation clearance the authority shall consider the following.
5.1.1 Validity of Installers Certification
Only a registered installer shall be permitted to install an optical fibre network. The authority shall take into consideration the relevance of the trade of the installers. Noncompliance of a single member of the installers shall lead to the disqualification for the permit.

5.1.2 Compliance of proposed installation to National Standards
All installations of fibre communications networks shall comply with the following ITU recommendations:

- i. L.35 installation of optical fibre cables in the access networks.
- ii. L.43 Optical fibre cables for buried application.
- iii. L.26 Optical fibre cables for aerial application.
- iv. L.108 Optical fibre cable elements for microduct blowing installation application

5.2 Installation of aerial fibre

5.2.1 Pole Types
Whenever an aerial installation of fibre is used, the poles used shall be made out of the following materials wood, cement, steel, or fibre.

5.2.2 Smart Poles
For the central business districts, residential areas and major trunk roads, only smart poles shall be used. The smart poles used should have a provision for functioning as street lights, CCTV, Street signage, Wi-Fi, and base station.

5.2.3 Pole Height
The height of the poles / smart poles used shall not be less Ten (10) metres.

5.2.4 Co-location
Whenever possible the applicant shall be encouraged to utilize existing facilities like Zesco poles and street light poles.

5.2.5 Labelling
Each fibre on a shared poles must have a label for easy of identification of the cables. The format of the label is to be specified by the authority.
5.3 Installation of directly buried fibre (Optical Fibre Ground Wires – OPGW)

a) Only cables with outer armouring, pipe systems or special plastic sheaths shall be used for directly buried applications.

b) The Installer shall ensure that steel, plastic or concrete markers are installed at locations to be agreed with the authority for purposes of identifying the path of the buried fibre. Further, the installer shall ensure that warning tapes are used to indicate to the excavators the close proximity of the buried optical fibre cable. This shall apply whether the micro trenching or mini trenching method is used.

c) Whenever the fibre is directly buried the installer shall ensure that the splicing cases are directly protected by a prefabricated box.

d) When fibre is to be buried adjacent to a high voltage power line, the fibre should have a semi conductive outer jacket or a track resistant jacket compound.

e) Where the fibre cable has to cross sub surface utility, the fibre cable shall always run below the utility cable and the Two (2) shall be separated by a distance of not less than 0.3 metres.

f) Where the fibre has to cross the road, only the Horizontal Directional Drilling (HDD) method shall be permitted.
5.4 Standards for installation of duct fibre

a) The initial installer shall ensure that the ducts used have enough provision to cater for future users. This shall include other operators who shall be required to rent out the space.

b) Whenever ducts are used for installation of fibre, the network splices and flexibility points shall always be in the manhole boxes.

c) The depth for burying the fibre / duct shall as specified below, this shall depend on the composition of the soil.

<table>
<thead>
<tr>
<th>Number</th>
<th>Characteristics of Soil and Layout Regions</th>
<th>Burying depth (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ordinary soil, hard soil</td>
<td>≥ 1.0</td>
</tr>
<tr>
<td>2</td>
<td>Half stone like soil (E.g. stonebrash &amp; efflorescent stone)</td>
<td>≥ 0.8</td>
</tr>
<tr>
<td>3</td>
<td>Full stone like soil and quicksand</td>
<td>≥ 0.6</td>
</tr>
<tr>
<td>4</td>
<td>Suburb, Village and small town</td>
<td>≥ 1.0</td>
</tr>
<tr>
<td>5</td>
<td>City street</td>
<td>≥ 0.8</td>
</tr>
<tr>
<td>6</td>
<td>Through railroad or highway from underside</td>
<td>≥ 1.0 (from roadbed)</td>
</tr>
<tr>
<td>7</td>
<td>Central reservation (median strip) and road shoulder of highway</td>
<td>≥ 0.7 (pavement) &amp; 0.8 (road)</td>
</tr>
<tr>
<td>8</td>
<td>Groove, ditch and pond</td>
<td>≥ 1.0</td>
</tr>
</tbody>
</table>

5.5 Sharing of Infrastructure

Where existing infrastructure is in place, the authority shall not consider an application for construction of similar infrastructure. Exceptions shall be made in cases of inadequate capacity and redundancy.

6 REQUIREMENTS FOR INSTALLATION OF BROADCASTING SITES

No broadcast transmission site either in full operation or test shall be set up without the clearance of the authority.
6.1 Location of transmission site

A broadcasting site shall be constructed so as to conform to the broadcasting area assigned by the authority. The authority shall be required to approve the surveyed location and identify test points for use during future compliance checks related to the equivalent isotopically radiated power (EIRP). The licensee shall not be permitted to shift the site of the transmitter within the broadcasting area without the consent of the authority.

6.2 Conformance to guidelines

Considering that a broadcasting site is an installation of national significance, it shall be required to conform to all the general installation guidelines. Further, all broadcast transmitters shall be installed in a grounded rack.

6.3 Types of Masts

The authority shall approve the type of the mast to be erected by a broadcasting station. These shall vary depending on the localities Central Business District, Urban and Peri Urban, and Rural areas.

6.4 Responsibilities of the owner of the mast

In the case of shared infrastructure, the owner of the tower shall bear the responsibility painting, torqueing, aviation lighting and grounding the installation.

7 REQUIREMENTS FOR DEPLOYMENT OF NEW TECHNOLOGIES

7.1 Deployment of technology

a) Whenever new technology is to be deployed, the operator shall request permission from the authority.

b) An operator or service provider shall not be permitted to advertise the new technology without prior permission of the authority.

c) In granting approval the authority shall consider the compliance of the technology to ITU standards, mitigation measures to safeguard consumers, and security aspects of the technology.
### 7.2 Demonstration and Roll out of Technology

a) The operator or service provider shall be required to demonstrate the technology on an agreed site or platform with the authority for a specified period of time before approval to roll out can be granted.

b) The authority shall approve the roll out plan, which the operator or service provider shall be required to adhere to without fail.

c) In the event that problems are noticed in the already approved sites, modules or platforms, the operator or service provider shall not be allowed to proceed with the remaining rollout until the identified problems are rectified.

d) The authority may subject the rectified problems to a period of observation not exceeding One (1) month before permitting the operator or service provider to proceed with the roll out.

### 8 REQUIREMENTS FOR INSTALLATION OF RADIO BASE STATIONS

#### 8.1 Construction Permit

a) All mobile services facilities and support structures shall be designed to blend in with the surrounding environment to the greatest extent possible.

b) This shall be in terms of electromagnetic compatibility, environmental, health, historical, cultural and any other Acts.

c) The application for construction of a telecommunication tower shall therefore take into consideration the following Acts:

   i. The ICT Act No. 15 of 2009
   
   ii. Environmental Management Act No. 12 of 2011
   
   iii. The Civil Aviation Act No. 5 of 2016
   

d) In this context the term tower is in reference to a self-supporting cantilevered steel lattice structure, guyed masts and steel pole.

e) Only angle legs, lattice legs and solid legs shall be used for towers. The use of tube legs is strictly prohibited.

f) The expected service life for a tower shall be a minimum of fifteen (15) years.
g) In the event that the authority determines that it is necessary to consult a third party or specialized agency in approving a construction application, all reasonable costs and expenses including travel expenses shall be borne by the applicant.

h) Failure to pay such costs and expenses or provide information required by the authority shall constitute grounds for refusal of a permit.

8.2 Tower Site considerations

a) An operator or service provider who intends to construct a tower must demonstrate that all tower sharing options within a radius of 1 km have been investigated before submitting an application to the authority.

b) The authority may disapprove an application if the applicants refuse to evaluate the option of co-location, or refuse to provide supporting evidence why co-location is not possible within the search radius.

c) Other options to be considered before construction of a new tower shall be utilization of existing facilities like tall buildings, water tanks and silos. The siting of the tower shall conform to the human exposure limits set by the ZAMBIAN HUMAN EXPOSURE STANDARD: ZM.S.101.

d) With regard to exposure to non-ionizing radiation, the tower antennas shall be installed such that members of the general public always fall in the compliance zone.

e) A mobile service facility or support structure shall not interfere or obstruct an existing or proposed telecommunications infrastructure. Any actual obstruction or interference shall be corrected by the applicant at no cost to the authority.

f) Any tower whose height is Thirty (30) meters or more shall be fitted with aviation lights, further the tower pieces shall be painted in alternate of red and white.

g) A tower shall not have a fall zone which is less than its height. In this regard no structure other than the communications related system shall be allowed within the fall zone.

h) Exceptions shall be considered where there is engineering certification indicating that the support structure is designed to collapse in a radius less than its fall zone.

i) A tower shall not be constructed in close proximity to a high voltage power transmission line of 11Kv or above.
j) The minimum safe distance for the tower to a high voltage power transmission line shall be 120% of the height of the tower.

k) For rooftop installations, the buildings structural engineer shall be required to approve the additional weight to the building before the authority can consider the application. Roof top installations shall only be restricted to light weight systems.

l) The installation shall adhere to principle in clause 3.1 to minimize visual impact.

8.3 Considerations for a new tower

For new constructions, the proposed site space, power facilities, tower heights and loading (weight and wind) shall be enough to support co-location of at least Three (3) mobile network operators.

8.4 Responsibilities of the tower owner

a) The owner of the tower shall ensure that all tenants conform to the installation guidelines set by the authority.

b) Where the installation sits on leased land, the owners shall ensure that the lease agreement does not contain any provision which restricts the lessee from entering into lease agreements on the site with other mobile network operators to support co-location.

c) The owners of the towers shall be required to provide and constantly update the database which shows which towers are available for co-location.

d) Where the existing tower is not capable of supporting co-location the option of decommissioning the old tower and building a new one capable of supporting co-location may be considered.

e) Decommissioning of towers:-

   i. Where the owner of the tower wishes to discontinue using the facility, the owner shall be requested to seek an abandonment approval from the authority and give a minimum of one month notice.

   ii. The authority will thereafter grant a period not exceeding sixty days for the tower to be decommissioned, failure to which penalties shall apply. The Sixty (60) days period shall not apply for shared sites.

   iii. Where the owner of the tower and the tenants fail to enter into a transfer of ownership or succession agreement, the authority reserves the right to make a ruling to support the co-location.
iv. If there are Two (2) or more users of a tower, abandonment shall not be determined to have occurred until all operations by users have ceased.

v. Any antenna or mobile network service provision infrastructure which is not used for a continuous period of Twelve (12) months shall be considered abandoned.

8.5 Protection of the tower against lightning

The installer of a radio base station shall be expected to comply with all the general installation guidelines. Further, the lightning protection system for any radio base station shall comply with ZS-ITU K.56 recommendation.

a) All communication towers must have an earth rod connected at the highest point to serve as the lightning protection system. Non Metallic towers or towers with a cross section area of less than 125 mm shall have earth straps running from the lightning rod to the ground.

b) These earth straps shall run on opposite sides of the tower. The earth straps must be made out of copper or steel coated with copper.

c) Where the length of the feeder from the tower to the shelter is in excess of 10 metres, the feeders shall be bonded to the tower and the feeder tray before they run to the equipment shelter.

d) All feeders shall always be bonded to the bonding bar installed near the feed through window.

e) Shielded cables may be directly run up the tower without need for a metallic duct provided the cable is bonded to the tower at the upper end and the shield is electrically continuous. The shielded cable shall also be connected to the earthing bar installed near the feed through window.

f) Where a feeder tray is used between the tower and the equipment shelter, the feeder tray shall be electrically continuous and bonded to the tower and earthing bar on the shelter for the entire length between the tower and the shelter.

g) Two (2) earth protection rings shall always be used for a base station. One shall be around the mast and the other around the equipment shelter.

h) The earth rings shall always be made of bare copper and the two rings shall always be bonded together.

i) Vertical rods shall always be connected along several points of the earth ring. The bare copper used for the rings shall be buried at a depth of not less than 0.5 metres.
j) The steel enforcement for the mast basement if any shall always be bonded to the earth rings. If the equipment shelter is metallic, then the feet of the shelter shall always be bonded to the earth ring.

k) To increase the upper soil resistivity, maintain soil conductivity and reduce the voltage gradient in the soil due to lightening, crushed stones shall always be used in the immediate area surrounding the tower.

l) The thickness of the stones layer shall not be less than 0.08 and extend for at least One (1) meter beyond the earth electrodes.

m) Where the tower is built on an area of high elevation like a hill, the crushed stones area shall extend to at least a meter beyond the fence.

n) If a metallic fence is used, an earth ring shall be installed along the fence and the fence shall be connected to this ring at regular intervals. The fence earth ring shall be bonded to the tower earth ring.

o) All electrodes in contact with the earth ring shall be made of copper or steel covered with copper and have a minimum cross section area of not less than 50mm

p) The earth of the utility meter box shall always be bonded to that of the tower earth ring.
ANNEX: APPLICATION FORMS

Pursuant to statutory Instrument 6 of 2011 under the ICT Act 15 of 2009 of the laws of Zambia

PRE-SITE INSTALLATION CLEARANCE

PART A

1.) Applicant Details
   Name: 

   Physical Address: 

   Postal Address: 

   Contact Number: 

   Or email address

2.) Nature of Installation

   □ New  □ Upgrade  □ Co-location
3.) Category

- Access Network
- Broadcasting Site
- Base Radio
- Backhaul
- Core Network
- Data Centre
- Hub / NOC
- Radio Base Station
- Support System
- Other (Specify) ………………………………………………………………………………………

4.) Location of communication facility

Address: ………………………………………………………………………………………

District: ………………………………………………………………………………………

Coordinates: ………………………………………………………………………………………

5.) Purpose of Installation

- Coverage / Access
- Capacity

6.) Requested By: ………………………………………………………. Signature: ………………………

Date: ………………………………………………………………………………………

Standards and Electronic Communications Networks – Draft Installation Guidelines
PART B

7.) Compliance Check List (To be completed by ZICTA inspector only)
   *please skip if not applicable

- Competence
- Human Exposure Limits
- Fall / Setback Zone
- EMC
- Environmental
- Aviation Considerations
- Licensed Area
- Co-location Factored
- Location Suitable
- Security
- Type Approval
- Coverage Simulation
- Backhauling Capacity
- Demo Site
- Letter of Authority
- Cross Border Coordination
- Design Criteria

PART C

8.) Support Documents Attached

a.)

b.)

c.)

d.)
PART D

9.) Permission to Proceed

☐ Approved  ☐ Not Approved

Comment(s): …………………………………………………………………………………………………………………
……………………………………………………………………………………………………………………………………
……………………………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………………………..

10.) Details of Inspector

Name

Designation: ______________________ Signature: ______________________

Date
Pursuant to statutory Instrument 6 of 2011 under the ICT Act 15 of 2009 of the laws of Zambia

POST-SITE INSTALLATION CLEARANCE

PART A

11.) Applicant Details

Name: 

Physical Address: 

Postal Address: 

Contact Number: 

Or email address

12.) Nature of Installation

☐ New  ☐ Upgrade  ☐ Co-location
13.) Category

- Access Network
- Broadcasting Site
- Base Radio
- Backhaul
- Core Network
- Data Centre
- Hub / NOC
- Radio Base Station
- Support System
- Other (Specify)

14.) Location of communication facility

- Address:
- District:
- Coordinates: E S

15.) Purpose of Installation

- Coverage / Access
- Capacity

16.) Requested By: 

Signature: 

Date: 
PART B

17.) Compliance Check List (To be completed by ZICTA inspector only)
*please skip if not applicable

☐ Electric Shock Signage  ☐ Human Exposure Limits  ☐ Fall Zone

☐ RF Warning Signage  ☐ MCB’s  ☐ Surge Protection

☐ Lightning Protection  ☐ Power Conditioning  ☐ Power Backup

☐ System Survivability  ☐ Wiring Colour Code  ☐ Wiring Conductor Size

☐ Backhauling Capacity  ☐ ROHS  ☐ Earth Resistance

☐ Aviation Light  ☐ Tower Painting  ☐ Generator Sound Attenuation

☐ Earth Bonding  ☐ Target Coverage Achieved

☐ Conformance to approved Design  ☐ Waste Management

PART C

18.) Snags Detected

f.)

[Blank]

g.)

[Blank]
PART D

19.) Permission to Proceed

☐ Approved  ☐ Not Approved

Comment(s): ...........................................................................................................................
...........................................................................................................................................
...........................................................................................................................................
...........................................................................................................................................

20.) Details of Inspector

Name

Designation: _______________________________  Signature: _______________________________

Date: _______________________________