# Installation Guidelines

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1.0 Introduction

The Zambia Information and Communications Technology Authority (the “Authority”) is provided for under section 4 of the Information and Communications Technologies Act No. 15 of 2009 (the “ICT Act”). Section 6 of the ICT Act empowers the Authority to regulate the provision of electronic communications services and products and monitor the performance of the sector, including the levels of investment and the availability, quality, cost and standards of the electronic communications services.

Under Regulation 17 of the ICT (Type Approval) Regulations, S.I No. 6 of 2011, (the “Type Approval Regulations”) the Authority is mandated to issue facility installation clearance that conforms to set national standards. Section 7 of the ICT Act further, empowers the Authority to issue guidelines for the better carrying out of its mandate. Pursuant to the mandate referred to above, the Authority issues these Guidelines.

2.0 Title and relationship to legislation and relevant documents

These Guidelines shall be read as one with the ICT Act, Type Approval Regulations, licence terms and conditions and any other relevant laws.

3.0 Definitions

In these Guidelines unless the context otherwise requires-

“ICT Act” means the Information and Communication Technologies Act No. 15 of 2009;

“Authority” has the meaning assigned to it under the ICT Act;

“Broadcasting Area” means an area of service (signal reception) varying in size depending on band or service;

“Broadcasting Site” means the location of a broadcasting transmitter;

“Decommission” means planned shutdown or removal of electronic communications apparatus from operation or usage;

“Electronic Communications Apparatus” has the meaning assigned to it in the ICT Act;

“Installation” means the process or act of making electronic communications apparatus ready for use. This includes undertaking the following actions whether in whole or in part:
(a) assembling;
(b) affixing or erecting; or
(c) setting up.

“Installation of National Significance” means an installation determined as such by the Authority in accordance with Type Approval Regulations.

“Small Office/Home Office” means a business or firm with an insignificant electronic communications network as may be determined by the Authority; and

“Tower” includes self-supporting cantilevered steel lattice structure, guyed masts or steel pole used for installation of electronic communications apparatus.

4.0 Application

4.1 These Guidelines shall apply to the installation and maintenance of electronic communications apparatus used or capable of being used to provide electronic communications services such as -

4.1.1 Land Mobile Radios - these shall include High Frequency (HF), Very High Frequency (VHF) and Ultra High Frequency (UHF) radio systems, mobile networks and internet service provisioning;

4.1.2 Broadcasting Stations - these shall include Radio, television, cable and satellite;

4.1.3 Backhaul facilities - these shall include Microwave, Satellite and Optical fibre;

4.1.4 Network Operations Centres (NOC) such as NOCs installed at utility companies, and network and service providers;

4.1.5 Data Centres - these shall include server rooms and data recovery centres;

4.1.6 Masts - these shall include poles, metal lattices, guyed lattices and locally fabricated masts; and

4.1.7 Any other electronic communications apparatus as the Authority may determine from time to time.

4.2 These Guidelines shall not apply to Small Office/Home Office (SOHO) and domestic installations.
5.0 Application for Facility Installation Clearance

A Licensee who intends, either by oneself or a third party, to carry out any installation of any electronic communications apparatus shall apply to the Authority for a facility installation clearance as set out in schedule 1 of these Guidelines.

6.0 Type Approval

A Licensee shall ensure that any electronic communications apparatus installed or intended to be installed is type approved in accordance with section 66 of the ICT Act.

7.0 Installation Principles

A Licensee shall adhere to the following principles for the design, siting, construction and operation of electronic communications apparatus:

7.1 Principle 1: Visual impact

A Licensee shall ensure that electronic communications apparatus is sited in such a way as to minimise negative visual impact by ensuring that:

7.1.1 The electronic communications apparatus is sited and designed with external colours, finishes and scale which all aim at achieving the visual impact referred to above;

7.1.2 the electronic communications apparatus mounted on a building is integrated with the design and appearance of the building;

7.1.3 the electronic communications apparatus is screened or housed to reduce its visibility where it does not blend into the surrounding environment;

7.1.4 the local council and any other relevant authorities such as ZESCO Limited and water utility companies, are consulted before any street tree is pruned, cut, destroyed or removed or any installation designs are effected; and

7.1.5 the electronic communications apparatus is located so as to minimise any interruption to a significant view of a heritage place, a landmark, a streetscape, panorama, whether viewed from public or private land.

7.2 Principle 2: Co-location

A Licensee shall, unless technically not feasible, utilise existing electronic communications apparatus such as underground conduits, utility poles, masts, towers or any other apparatus. Where the Licensee is of the opinion that it is not technically feasible to use existing apparatus, such Licensee shall apply to the Authority in writing explaining why such use is not feasible. The Authority shall consider such application and make a determination on the matter.
7.3 Principle 3: Health and safety standards

A Licensee shall:

7.3.1 design, install and maintain electronic communications apparatus in accordance with the following health and safety standards and any other standards as may be adopted, adapted or developed by the Authority from time to time:

(a) ITU-T K.56: Protection of radio base stations against lightning discharges;

(b) ZM.S.101: Zambian Human Exposure Standard; and

(c) ITU-T K.70: Mitigation techniques to limit human exposure to EMFs in the vicinity of radio-communication stations.

7.3.2 ensure that construction is carried out in a safe manner in accordance with relevant requirements of the Occupational Health and Safety Act, No. 36 of 2010 (the “OHS Act”) as well as any other applicable standard or law such as the Workers’ Compensation Act; and

7.3.3 ensure that obstruction or danger to pedestrians or vehicles caused by the location of the electronic communications apparatus, construction activity or materials used in construction is minimised or where possible, completely extinguished.

7.4 Principle 4: Disturbance and risk relating to siting and construction

A Licensee shall, when installing electronic communications apparatus, comply with the prevailing environmental protection and management policies and guidelines by ensuring that:

7.4.1 Soil erosion during construction as well as soil instability during operation is minimised in accordance with any relevant law, policy, standard or guideline issued by the Zambia Environmental Management Agency (ZEMA) or any other relevant government entity;

7.4.2 Sufficient measures are put in place to minimise any negative effect on adjoining properties and public access during construction;

7.4.3 Effective traffic control measures are in place during construction;

7.4.4 Open trenches are guarded and appropriate warnings are in place;
7.4.5 Disturbance to flora and fauna are minimized during construction and vegetation replaced to the satisfaction of the land owner or responsible authority at the conclusion of the works; and

7.4.6 Street furniture, paving or other existing facilities removed or damaged during construction are reinstated, repaired or replaced as the case may be, at the Licensee’s expense, with such furniture, paving or other facilities being of the same or better condition compared to that which existed prior to the construction.

8.0 General Requirements for Installation Clearance

The Authority shall in considering an application for facility installation clearance take into account the following:

8.1 Qualifications of Installers

8.1.1 The qualifications and relevance of the trade of the installers carrying out the installations.

A person or entity involved in the designing, installation and maintenance of electronic communications apparatus shall be required to hold a valid dealers certificate issued by the Authority or otherwise be approved by the Authority

8.1.2 All installers must be registered members of the Engineering Institution of Zambia and any other relevant professional body.

8.1.3 The application shall not be approved where the applicant fails to show competence certification of its team member(s) or its sub-contractors.

8.1.4 A Licensee shall not engage the services of unqualified persons to conduct installation of electronic communications apparatus.

8.2 Health and Safety

8.2.1 Occupational Health and Safety

8.2.1.1 A Licensee shall adopt strict internal health and safety policies.

8.2.1.2 A Licensee shall observe health and safety of workers and all persons lawfully present at workplaces in accordance with the OHS Act and the Workers’ Compensation Act while undertaking
the installation and maintenance of electronic communications apparatus.

8.2.1.3 Workers undertaking installation and maintenance of electronic communications apparatus shall routinely receive first aid refresher training.

8.2.2 Prevention of accidental electric shock

A Licensee shall ensure that workers are not exposed to electrical related hazards while undertaking installation and maintenance of electronic communications apparatus by:

8.2.2.1 ensuring that all circuitry of high voltage or current bear warning signage as provided in Schedule 2 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);

8.2.2.2 ensuring that the signage referred to in (8.2.2.1) above is placed at a visibly noticeable location and before the intended audience is exposed to the hazard; and

8.2.2.3 being provided with adequate protective wear including but not limited to appropriate gloves and other such implements.

8.3 Protection against electrical surge and lightning

A Licensee shall ensure that all installations of electronic communications apparatus have a system for protection against electrical surge and lightning.

8.3.1 Surge Protection

Every power supply to an electronic communications apparatus shall have surge protection or suppressors for indirect lightning strikes and other disturbances in the power system.

8.3.2 Lightning protection

All installations of electronic communications apparatus shall 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.

8.3.2.1 A Licensee shall ensure that installations of electronic communications apparatus comply with any of the following standards necessary for the installation:
(a) ITU-T K.72: Protection of telecommunication lines using metallic conductors against lightning - Risk management;

(b) ZS ITU-T K.56: Protection of radio base stations against lightning discharges;

(c) ITU-T K.112: Lightning protection, earthing and bonding: Practical procedures for radio base stations; or/and

(d) ZS ITU-T K.47: Protection of telecommunication lines against direct lightning flashes.

8.3.2.2 Where the electronic communications apparatus uses coaxial or Ethernet cables to connect to an antenna or other device, the Licensee shall ensure that the cables have lightning suppressor(s) installed along the path. The coaxial cable used shall also be earth strapped at several intervals before it connects to the equipment; and

8.3.2.3 A Licensee shall ensure that the earthing resistance of an Installation does not exceed Five (5) Ohms.

8.3.2.4 A Licensee shall ensure that an installations of national significance has a power conditioning system capable of at least correcting over voltages and under voltages.

8.4 Public Safety

8.4.1 Prevention of injuries

8.4.1.1 A Licensee shall ensure that electronic communications apparatus installed do not in any way pose a danger to any person, property or the general public.

8.4.1.2 The dangers to be considered shall include but not limited to: injury to members of the public by collapsing of infrastructure or part thereof, electrocution or lightning-related injury or damage to property such as that caused by setting up installations without lightning protection; and tripping leading to injury due to carelessly laid out cables.

8.4.1.3 A Licensee shall ensure that all feeders or signal lines running on a mast, pole or support structure are securely fastened by mechanical clamps.
8.4.2 Decommissioning of electronic communications apparatus

8.4.2.1 A Licensee who intends to discontinue using the installed electronic communications apparatus shall notify the Authority of such intention not less than 30 days before the discontinuance.

8.4.2.2 A Licensee shall decommission the electronic communications apparatus within sixty days from the date of discontinuance and shall inform the Authority in writing to that effect.

8.4.2.3 Where there are two (2) or more users of an electronic communications apparatus, decommissioning shall not be deemed to have occurred until all operations by the users have ceased; and

8.4.2.4 Electronic communications apparatus that is not used for a continuous period of twelve (12) months shall be considered abandoned and the Authority may order decommissioning of such site or allocate it for use for universal access purposes.

8.4.3 Radio Frequency (RF) Signage

A site with RF emissions shall have a warning sign as set out in Schedule 2 of these Guidelines. A Licensee shall place signage at a visible place before any member of the public is potentially in danger of being exposed to the RF emissions.

8.4.4 Approval of masts

A Licensee shall ensure that:
8.4.4.1 all masts are inspected and certified by a qualified civil engineer;
8.4.4.2 the masts are galvanized to a minimum of 85µm;
8.4.4.3 all masts requiring ground re-enforcement are built in a concrete foundation whose mixture shall be of strength in excess of 20MPa;
8.4.4.4 all masts have a lightning spike or rod for purposes of protection against direct lightning strikes. These shall extend for at least a meter above the mast; and
8.4.4.5 all structures requiring civil maintenance such as tower painting and torqueing are done in conformity with the manufacturer’s specifications.
8.4.5 Fire prevention

8.4.5.1 A Licensee shall comply with any of the following standards for fire prevention, detection and extinction relevant to installation:

(a) ITU-T L.21: fire detection and alarm systems detector and sounder devices;

(b) ITU-T L.22: fire protection; and

(c) ITU-T L.23: fire extinction - classification and location of fire extinguishing installations and equipment on premises.

8.4.5.2 A Licensee shall deploy smoke detectors, fire extinguishers or fire retardant materials for purposes of detecting, stopping or preventing fire:

8.4.5.3 Where fire extinguishers are used, the correct type corresponding to the environment to be protected shall be used. These may include: powder, carbon dioxide and/or water extinguishers.

8.4.5.4 A Licensee shall where necessary, ensure that fire extinguishers are properly serviced, in a usable manner and service stickers bearing the date of last service or next due date are affixed to the fire extinguisher.

8.4.6 Environmental and waste management

8.4.6.1 A Licensee shall comply with any of the following environmental and waste management standards relevant to the installation:

(a) ISO 14000: Environmental Management;

(b) ZS ITU-T L.24: classification of outside plant waste; and

(c) ZS ITU-T L.45: minimizing the effect on the environment from the outside plant in communication networks.

8.4.6.2 A Licensee shall have in place a procedure for handling e-waste which complies with the relevant environmental regulations and laws.

8.4.6.3 A Licensee shall not install electronic communications apparatus using any substance which is nationally or internationally declared as being hazardous such as chlorofluorocarbons (CFC) refrigerants, lead and mercury.
8.5 System Reliability

8.5.1 Reliability of power supply

8.5.1.1 A Licensee shall ensure that all installations of electronic communications apparatus of national significance have a backup power system capable of sustaining the system for at least three (3) hours. This may be a generator, battery bank or solar system.

8.5.1.2 Where a generator is used as a backup power supply in a built up area, the Licensee shall ensure that the generator is fitted with sound attenuators.

8.5.2 Survivability of the system

A Licensee may be required to, and shall, when required so to do demonstrate the system’s ability to survive failures. This may take the form hot, standby or restoration with or without human intervention.

8.6 Monitoring system

A Licensee may have in place or be requested by the Authority to have a network monitoring system where the electronic communications network has nodes in unmanned areas, or is spread about in a wide area or geographical location.

8.7 Conformity to electrical wiring standards

8.7.1 Circuit Protection

A Licensee shall ensure that all electronic communications apparatus have an electrical power supply system which utilizes circuit breakers for purposes of protection against overcurrent.

8.7.2 Cable Colour Codes

A Licensee shall ensure that the colours of the cables used for installation of electronic communications apparatus conform to national standard.

8.7.2.1 The following shall apply for single phase systems:
8.7.2.2 The following shall apply for three (3) phase systems:

<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>

8.7.3 Size of electrical conductors
All electronic communications apparatus shall 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.

8.7.4 Trunking of cables
All cables shall be routed via a conduit, tray or trunking case except for armoured cables and feeders.

8.7.5 Separation of cables
8.7.5.1 A Licensee shall ensure that signal cables are run in separate trunkings from the power supply cables where cables used in the installation of electronic communications apparatus are not capable of shielding against interference, mutual inductions and do not have proven immunity.
8.7.5.2 A Licensee shall ensure that trunkings carrying signal cables in 8.7.5.1 above are clearly labelled or coloured Orange.

8.7.6 Prevention of ground loops
A Licensee shall ensure that the electronic communications apparatus does not have ground loops. This shall also apply whether or not the installation site is shared.
8.8 Infrastructure sharing

8.8.1 Initial installation
A Licensee shall, when setting up an installation, be required to demonstrate the capability of the installation or the system of which the installation is a part, to accommodate other systems.

8.8.2 Co-location
A Licensee shall utilise existing electronic communications apparatus such as underground conduits, utility poles, masts, towers or any other apparatus where such apparatus are available to support the new installation.

8.8.3 Labeling of installations
A Licensee shall ensure that all electronic communications apparatus installed are clearly labelled so as to identify the Licensee who owns such apparatus. The labeling shall apply to, among others nodes, feeders, signal lines and antennas or auxiliary equipment.

8.8.4 Security
A Licensee shall ensure that all electronic communications apparatus installed are protected from unauthorized access. This shall apply to both local and remote electronic access. Where a Licensee installs network security devices, such devices shall be capable of storing all authorized and unauthorized access attempts.

9.0 Requirements for Installation of Optical Fibre Networks

9.1 Fibre Route Approval
A Licensee shall:

9.1.1 submit to the Authority a proposed route for approval. The Authority may approve or reject the proposed route and where necessary in consultation with the local council or any other relevant authorities;

9.1.2 verify apparatus, utility related and any other installations in the proposed route using tools such as ground penetrating radars or Global Information System (GIS).

9.2 Applicable standards
A Licensee shall, where applicable, adhere to the following standards in addition to the general requirements in 8 above:
(a) ITU-T L.35: installation of optical fibre cables in the access networks; or

b) ITU-T L.108: Optical fibre cable elements for micro-duct blowing installation application.

9.3 Installation of aerial fibre

9.3.1 A Licensee shall ensure that poles used to install aerial fibre are made out of any of the following materials: wood, cement, steel or fibre.

9.3.2 A Licensee shall ensure that the height of the poles used is as prescribed by the Road Development Agency or any other relevant authorities.

9.3.3 A Licensee shall ensure that only smart poles are used for the central business districts, residential areas and major trunk roads. The smart poles should be capable of hosting street lights, CCTV, street signage, Wi-Fi or base station.

9.3.4 Where a Licensee desires to use poles made from material other than that listed in this Guideline, believing the material to be as good, suitable and appropriate as those listed herein, such Licensee shall apply to the Authority demonstrating the strength, suitability and appropriateness of such material. The Authority may, following consideration and consultation with relevant persons or entities, either approve or reject the application for use of the material in question.

9.3.5 A licensee shall apply the following standards to the installation of aerial fibre:

(a) ITU-T L.26: Optical fibre cables for aerial application;

(b) ITU-T K.108: Installation of communication equipment and utility poles; and

(c) ITU-T L.88: Management of poles carrying overhead telecommunications lines.

9.4 Labelling of optical fibre cables

9.4.1. A Licensee shall ensure that all optical fibre cables are clearly labelled so as to identify the Licensee who owns it.
9.5 Installation of directly buried fibre (Optical Fibre Ground Wires - OPGW)

9.5.1 A Licensee shall ensure that only cables with outer armouring, pipe systems or special plastic sheaths are used for directly buried applications;

9.5.2 A Licensee 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;

9.5.3 A Licensee shall ensure that warning tapes are used to indicate to the excavators how close in terms of proximity the buried optical fibre cable is. This shall apply whether the micro trenching or mini trenching method is used;

9.5.4 A Licensee shall ensure that the splicing closures are directly protected;

9.5.5 A Licensee shall ensure that where 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;

9.5.6 A Licensee shall ensure that where the fibre cable has to cross sub surface utility pipe, cable or such other installation, 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;

9.5.7 A Licensee shall ensure that where the fibre is installed across the road or has to cross the road, only the Horizontal Directional Drilling (HDD) method shall be permitted; and

9.5.8 A Licensee shall, in installing directly buried optical fibre, comply with any of the following standards:

(a) ITU-T L.101: Optical fibre cables for buried application;
(b) ITU-T L.48: Mini-trench installation technique; or
(c) ITU-T L.49: Micro-trench installation technique.

9.6 Standards for installation of duct fibre

A Licensee shall in addition to clause 8 above ensure that:

9.6.1 the network splices and flexibility points are placed in a manhole whenever ducts are used for installation of fibre;
9.6.2 Routine maintenance checks are conducted in accordance with the following standards:

(a) ZS ITU-T L.73: Methods for inspecting and repairing underground plastic ducts;

(b) ZS ITU-T L.74: Maintenance of cable tunnels;

(c) ZS ITU-T L.25: Optical fibre cable network maintenance;

(d) ZS ITU-T L.53: Optical fibre maintenance criteria for access networks; and

(e) ZS ITU-T L.66: Optical fibre cable maintenance criteria for in-service fibre testing in access networks.

9.6.3 The depth for burying the fibre/duct is as specified below depending on the composition of the soil.

<table>
<thead>
<tr>
<th>No.</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 quicks and</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>
10.0 Requirements for Installation and Maintenance of Broadcasting Sites

10.1 A Licensee shall:

10.1.1 Ensure that a broadcasting site conforms to the broadcasting area assigned and the terms and conditions of the Radio licence;

10.1.2 not shift broadcasting sites without the consent of the Authority;

10.1.3 ensure that broadcasting transmitters are installed in grounded racks;

10.1.4 ensue that masts are constructed in accordance with these Guidelines; and

10.1.5 ensure that the type of mast used, whether in the central business district, urban, peri-urban areas or rural areas are approved by the relevant authorities.

10.2 In the case of shared infrastructure, the owner of the tower shall be responsible for the maintenance of the tower including painting, torqueing, aviation lighting and grounding.

11.0 Requirements for Deployment of New Technologies

11.1 Deployment of technology

A Licensee shall:

11.1.1 not deploy or advertise any new technology without the approval of the Authority; and

11.1.2 ensure that the new technology intended to be deployed complies with the relevant standards and that mitigation measures to safeguard consumers and national security are in place.

11.2 Demonstration and deployment of new technology

11.2.1 A Licensee shall demonstrate the technology intended to be deployed, on a site or platform agreed with the Authority, for a specific period of time before approval to rollout the technology may be granted;

11.2.2 A Licensee shall ensure compliance with the approved roll out plan. In the event that faults are noticed in approved sites, modules or
platforms, a Licensee shall not proceed with the remaining rollout until the faults are rectified.

11.2.3 The Authority may subject the electronic communication-related apparatus, equipment or system to a specified period of observation before deciding whether to approve or reject the proposed deployment or roll out of the apparatus, equipment or system.

12.0 Requirements for Installation of Radio Base Stations

12.1 Facility installation clearance

A Licensee shall in relation to an application for clearance:
12.1.1 ensure that all electronic communications apparatus and support structures are designed to blend in with the surrounding environment to the greatest extent possible and that electromagnetic compatibility, environmental, health, historical and cultural requirements, *inter alia*, are adhered to;

12.1.2 ensure that communication towers are constructed using angle, lattice or solid legs. The expected service life for a tower shall be a minimum of fifteen (15) years; and

12.1.3 bear the cost and expenses relating to verification of the towers where the Authority decides to engage the services of a third party or specialized agency in that regard.

12.2 Co-location considerations

A Licensee:

12.2.1 ensure that the proposed site, power facilities, tower heights and loading (weight and wind) for new constructions are enough to support co-location of at least two (2) other Licensees;

12.2.2 intending to construct a tower must demonstrate that all tower sharing options within a radius of 1km have been investigated before submitting an application to the Authority;

12.2.3 refusing to co-locate or to provide supporting evidence why co-location is not possible within the search radius may have its application for facility installation clearance rejected;
12.2.4 shall consider using existing facilities such as tall buildings, water tanks and silos for installation of base station facilities; and

12.2.5 shall ensure that electronic communications apparatus installed or support infrastructure proposed to be installed does not interfere or obstruct existing or planned infrastructure. Any actual obstruction or interference shall be corrected at the cost of the Licensee that caused the obstruction or interference.

12.3 General Requirements

A Licensee shall:

12.3.1 ensure that any tower it erects complies with the requirements of any prevailing civil aviation legislation and any other relevant laws;

12.3.2 provide for a fall zone equal to the height of the tower except where there is engineering certification showing that the tower is designed to collapse in a radius less than its fall zone. No structure other than communications related structures shall be allowed within the fall zone;

12.3.4 ensure that a tower is not constructed in close proximity to a high voltage power transmission line of 11Kv or above;

12.3.5 ensure that the minimum safe distance for the tower to a high voltage power transmission line is 120% of the height of the tower;

12.3.6 ensure that, for rooftop installations, the building's structural engineer approves the additional weight to the building before the Authority can consider the application; and

12.3.7 ensure that the installation adheres to principle No. 1: visual impact referred to herein.

12.4 Responsibilities of the infrastructure owner

A Licensee or infrastructure owner shall:

12.4.1 ensure that where the tower site is on leased land, the lease agreement does not contain any provision which restricts the lessee (Licensee) from co-locating with other Licensees;
12.4.2 maintain and constantly update a database which shows the tower(s) space or infrastructure available for co-location; and

12.4.3 consider the option of de-commissioning a tower and constructing a new one with adequate capacity where an existing tower does not have enough capacity to accommodate other electronic communications apparatus. Licensee

**12.4 Protection of the tower or infrastructure against lightning**

A Licensee or infrastructure owner shall ensure that:

12.4.1 the earth straps made out of copper or steel coated with copper run on opposite sides of the tower;

12.4.2 where the length of the feeder from the tower to the shelter is in excess of 10 metres, the feeders are bonded to the tower and the feeder tray before they run to the equipment shelter;

12.4.3 all feeders are bonded to a cable entry panel installed near the feed through window. Where shielded cables are used, the cables may be run directly up the tower without need for a metallic duct;

12.4.4 the cable is bonded to the tower at the upper end and the shield is electrically continuous and connected to the earthing bar installed near the feed through window;

12.4.5 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;

12.4.5 two (2) earth protection rings are used for a base station, one around the mast and the other around the equipment shelter;

12.4.6 the earth rings are made of bare copper and the two rings are bonded together;

12.4.7 vertical rods are connected along several points of the earth ring and the bare copper used for the rings is buried at a depth of not less than 0.5 metres;

12.4.8 the steel enforcement for the mast basement (if any) is bonded to the earth rings. Where the equipment shelter is metallic, the feet of the shelter shall be bonded to the earth ring;

12.4.9 the upper soil resistivity is increased, soil conductivity is maintained, the voltage gradient in the soil due to lightning reduced and crushed stones are placed in the immediate area surrounding the tower;
12.4.10 the thickness of the stones layer is not less than 0.08mm and extend for at least One (1) meter beyond the earth electrodes;

12.4.11 where the tower is built on an area of high elevation such as a hill, the crushed stones area extends to at least a meter beyond the fence;

12.4.12 where a metallic fence is used, an earth ring is installed along the fence and the fence is connected to this ring at regular intervals as well as the fence earth ring is bonded to the tower earth ring;

12.4.13 all electrodes in contact with the earth ring are made of copper or steel covered with copper and have a minimum cross section area of not less than 50mm²; and

12.4.14 the earth of the utility meter box is bonded to the tower earth ring.

13.0 MISCELLANEOUS

13.1 A Licensee shall abide by all applicable laws, policies, standards and guidelines. A Licensees shall, over and above applicable standards referred to herein, abide, where applicable, to the standards outlined in the Schedule 3 hereto.

14.0 Failure to Comply With Guidelines

14.1 A Licensee who fails to comply with these Guidelines commits an offence under section 79(1) of the ICT Act No. 15 of 2009.

15.0 Transitional Provisions

15.1 A Licensees shall, within 90 days of the publication of these Guidelines, submit to the Authority its network architectures and indicate the compliance status of its electronic communications apparatus in relation to these Guidelines.

15.2 Electronic communications apparatus installed before the issuance of these Guidelines shall, in so far as the installation is consistent with these Guidelines, be deemed to have been installed in compliance with these Guidelines.

15.3 Where an installation is inconsistent with these Guidelines, the Authority may direct the Licensee to comply with these Guidelines within a specified period at the Licensees own cost.

15.4 The Authority may forbear from applying to a Licensee any of the provisions of these Guidelines upon a Licensee providing compelling reasons or otherwise.
SCHEDULE 1
APPLICATION FORMS

Form 1
(Clauses 5)

ZAMBIA INFORMATION AND COMMUNICATIONS TECHNOLOGY AUTHORITY

The Information and Communications Technologies Act, 2009

(Act No. 15 of 2009)

Installation Guidelines 2020

PRE-SITE INSTALLATION CLEARANCE APPLICATION FORM

PART A

1.) Applicant Details

Name:

________________________________________

Physical Address:

________________________________________

Postal Address:

________________________________________

Contact Number:

________________________________________

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.) Proposed location of electronic communications apparatus

Address:

District:

Coordinates: E S

5.) Purpose of Installation

- Coverage/Access
- Capacity

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

Date: ........................................
PART B

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

☐ Qualification  ☐ 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.)
e.)
PART D

9.) Recommendation and approval

☐ Recommended  ☐ not recommended

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

.................................................................

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10.) Details of Inspector

Name

Designation  Signature

Date

Approval

☐ Approved  ☐ not approved

Name
ZAMBIA INFORMATION AND COMMUNICATIONS TECHNOLOGY AUTHORITY

The Information and Communications Technologies Act, 2009

(Act No. 15 of 2009)

Installation Guidelines 2020

POST-SITE INSTALLATION CLEARANCE

PART A

11.) Applicant Details

Name: 

Physical Address: 

Postal Address: 

Contact Number: 

Email address: 

12.) Nature of Installation

[] New  [] Upgrade  [] Co-location

13.) Category

[] Access Network  [] Broadcasting Site  [] Base Radio
14.) Location of communication facility

Address: ________________________________

District: ________________________________

Coordinates: ________________________________

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.)


g.)
PART D

19.) Recommendation and approval

☐ Recommended  ☐ Not recommended

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

...........................................................................................................................................

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...........................................................................................................................................

...........................................................................................................................................

20.) Details of Inspector

Name

Designation

Signature

Date

Approval

☐ Approved  ☐ Not approved
Clause 7.3 and 7.4.2(c)

SCHEDULE 2

1. High Voltage warning signage

![High Voltage warning signage image]

2. RF signage

![RF signage image]
SCHEDULE 3

Cabling Standards

(a) EN 50173-1:2011 Information technology - Generic cabling systems - Part 1: General requirements

(b) EN 50173-3:2007/A1:2010 Information technology - Generic cabling systems - Part 3: Industrial premises;

(c) EN 50173-5:2007/A2:2012 Information technology - Generic cabling systems - Part 5: Data Centres;

(d) EN 50173-6:2014 Information technology - Generic cabling systems - Part 6: Distributed building services;


(g) EN 50174-3:2013 Information technology - Cabling installation - Part 3: Installation planning and practices outside buildings;

(h) EN 50346:2002/A2:2009 Information technology - Generic cabling systems - Testing of installed cabling;

(i) ISO 11801 edition 2.2:2011 Information Technology Generic Cabling for customer premises;


(k) ISO/IEC 15018:2005 Information technology—Generic cabling for homes;

(l) ISO/IEC 24702:2007 Telecommunications installations—Generic cabling—Industrial premises; and