



**GUIDELINES**

**FOR**

**UNDERTAKING**

**ICT**

**INFRASTRUCTURE**

**WORKS**

**JUNE 2018**

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Pursuant to Regulation 19. (2) of the Kenya Information and Communications (Licensing and Quality of Service) Regulations, 2010, the Communications Authority of Kenya (hereinafter referred to as the Authority) makes the:

## **Guidelines for Undertaking ICT Infrastructure Works, June 2018**

### **I. PREAMBLE**

#### **1. Citation**

These Guidelines may be cited as the Guidelines for Installation and Maintenance of ICT Infrastructure, 2018.

#### **2. Interpretation**

The terms used in these Guidelines have the same meaning as in the Act and the International Telecommunication Union (ITU) unless where the context otherwise requires. In particular:

2.1. **“ICT Infrastructure”** as used in these Guidelines refers to Internal and External Installation and Maintenance works including but not limited to:

2.1.1. Data centers and rooms;

2.1.2. Equipment housing;

2.1.3. Masts and towers;

2.1.4. Wired infrastructure - optic fibre, structured cabling, and

2.1.5. Wireless based systems including system for broadcasting, microwaves links, Wi-Fi hotspots.

2.2. **“Telecommunications Technical Personnel and Telecommunications Contractor”** (hereinafter referred to as licensees) are persons or entities licensed by the Authority to undertake and/or supervise installation and maintenance of ICT infrastructure.

#### **3. Objective**

The objective of these Guidelines is to ensure that new and existing ICT infrastructure:

3.1. Are protective of human health and the environment;

3.2. Do not expose the users or other persons near the ICT infrastructure to any danger, and

3.3. Do not adversely affect the integrity (proper end-to-end functioning) of other ICT networks.

#### **4. Application of the Guidelines**

These Guidelines apply to the installation and maintenance of ICT infrastructure including cabling for both telecommunications and broadcasting as well as the associated installations and equipment which may be wired and/or wireless.

- 4.1. These Guidelines must be read in conjunction with regulations and guidelines from other regulatory agencies such as Energy Regulatory Commission (ERC), Kenya Bureau of Standards (KEBS), National Environmental Management Authority (NEMA) and Radiation Protection Board (RPB) as well as the Planning and Buildings Code/Regulations.
- 4.2. These Guidelines apply to every individual and entity-
  - 4.2.1. Undertaking ICT infrastructure works, and
  - 4.2.2. Who owns or operates ICT infrastructure.

#### **5. Authorization to Undertake ICT infrastructure Works**

The Authority, in accordance with the Telecommunications Market Structure under the Unified Licensing Framework, licenses entities that wish to undertake ICT infrastructure works including:

- 5.1. Telecommunications Contractor which are entities registered in Kenya as businesses or companies, and
- 5.2. Telecommunications Technical Personnel who are Kenya citizen proficient in ICT works.

## **II. CONSERVATION OF THE ENVIRONMENT**

Pursuant to Regulation 20 and 21 of the Kenya Information and Communications (Licensing and Quality of Service) Regulations, 2010, licensees shall ensure that the ICT infrastructure works they undertaken does not compromise the environment, natural habitats and are safe to users and other persons. In particular:

#### **6. Environmental Standards, Guidelines and Recommendations**

While undertaking ICT infrastructure works, licensees shall:

- 6.1. Comply with the Environmental Management and Co-ordination Act (EMCA) 1999;
- 6.2. Observe and adhere to International standards, guidelines and recommendations including:
  - 6.2.1. ITU-T L.1300 – Best practices for green data centres (Approved in 2014-06-29): This Recommendation describes best practices

aimed at reducing the negative impact of data centers on the climate;

- 6.2.2. KS 1590-2:2001 Siting of radio communications facilities specification;
- 6.2.3. IFC Environmental, Health & Safety Guidelines for Telecommunication;
- 6.2.4. International Commission on Non-Ionizing Radiation Protections (INIRP) Guidelines for Exposure to EMF, and
- 6.2.5. ITU-T Recommendations L series: Environment and ICTs, climate change, e-waste, energy efficiency; construction, installation and protection of cables and other elements of outside plant.

## **7. Impact on Natural Habitats**

While undertaking ICT infrastructure works, licensees shall comply with the recommended measures to prevent and control impacts to natural habitats include:

- 7.1. Undertake an initial Environmental Impact Assessment (EIA) audit and submission of the same to NEMA for approval;
- 7.2. Undertake regular EIA self-audits of the ICT infrastructure;
- 7.3. Use existing utility, transport corridors, masts and towers whenever possible;
- 7.4. Site towers and masts to avoid critical habitats and use camouflaging techniques where possible;
- 7.5. Design new towers and masts that can accommodate more than one user;
- 7.6. Ensure the placement and intensity of tower lighting meets the required aviation standard, and
- 7.7. Avoid construction activities during the breeding season and other sensitive seasons or times of day.

## **8. Waste Management**

While undertaking ICT infrastructure works, licensees shall manage both electronic waste and solid waste generated in the cause of construction by adhering to:

- 8.1. The Waste Management Standards – Legal Notice 121: Environmental Management and Co-ordination Act (Waste Management) Regulations, 2006.
- 8.2. The Water Quality Standards – Legal Notice 120: The Environmental Management and Coordination (Water Quality) Regulations, 2006.

## **9. Noise Management**

While undertaking ICT infrastructure works, licensees shall implement noise control and prevention measures in compliance with Legal Notice 61: Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009.

## **III. HEALTH AND SAFETY**

### **10. Occupational Health and Safety**

- 10.1. While undertaking ICT infrastructure works, licensees shall observe safety, health and welfare of workers and all persons lawfully present at workplaces in accordance with the Occupational Safety and Health Act, 2007.
- 10.2. Additionally, it is recommended that workers undertaking ICT infrastructure works should routinely receive first aid refresher courses to assist victims in the event of accidents.

### **11. Electrical Safety**

While undertaking ICT infrastructure works, licensees shall ensure workers are not exposed to dangers related to electrical conduct by:

- 11.1. Engaging licensed electrical personnel to perform any power related activities such as de-energizing before embarking on installation or maintenance activities;
- 11.2. Identifying and marking of underground cable installations before excavation works and maintain the drawings and plans of such installations;
- 11.3. Correctly grounding ICT infrastructure where applicable and routine measurement of earth ground values for preventive maintenance purposes as well as safety assurance;
- 11.4. Properly insulation when working in exposed, energized or conductive areas, and

11.5. Adoption of a strict health and safety plan.

## **12. Optical Fibre Safety**

While undertaking ICT infrastructure works, licensees shall take necessary measures to ensure workers are safeguarded from possible eye damage and risk of burns especially in high-powered laser installations. In addition, workers will be safeguarded from risk of injuries from microscopic fibre shards. To mitigate such risks:

- 12.1. Licensees will develop and adopt laser light safety and fibre management procedure, and
- 12.2. Workers will be expected to undertake:
  - 12.2.1. Routine refresher trainings on laser installations;
  - 12.2.2. Periodic eye examinations, and
  - 12.2.3. Wear protective clothing on the job.

## **IV. INSTALLATION STANDARDS**

Before undertaking ICT infrastructure works, licensees shall ensure that the equipment they intend to install is Type Approved by the Authority. Installation and maintenance of the said equipment shall be as guided in the manufacturer's manuals.

## **13. Electromagnetic Field (EMF) Emissions**

- 13.1. During and after undertaking ICT infrastructure works, licensees shall manage EMF emissions by:
  - 13.1.1. Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP);
  - 13.1.2. Periodically monitoring the average and peak exposure levels to ensure they remain below the ICNIRP recommendation;
  - 13.1.3. Limiting public access to tower and mast locations, and
  - 13.1.4. Personal using monitors during work activities.
- 13.2. Licensee shall observe the following standards:
  - 13.2.1. KS1847-1:2007 Radiofrequency radiation regulations - Part 1: Maximum exposure levels to radiofrequency fields - 3 kHz to 300 GHz. / Health and safety;
  - 13.2.2. KS1847-2:2007 Radiofrequency radiation regulations - Part 2: Principles and methods of measurement. / Health and safety, and

- 13.2.3. ITU-T Recommendations K series: Protection against interference.

## **14. Cable Management**

- 14.1. To facilitate routine maintenance and quick identification of faulty cables, licensees while undertaking ICT infrastructure works shall adopt best practice cable management standards by using products such as:
- 14.1.1. cable trays;
  - 14.1.2. cable ladders, and
  - 14.1.3. cable baskets to provide support cables through cabling routes.
- 14.2. Further, licensees shall employ color-coding techniques to keep track of cables and for ease of identification especially where cables share a duct, tray or trench.
- 14.3. When installing and maintaining cables, licensees shall adhere to the following standards:
- 14.3.1. EN 50173-1:2011 Information technology - Generic cabling systems - Part 1: General requirements EN 50173-2:2007/A1:2010 Information technology - Generic cabling systems - Part 2: Office premises
  - 14.3.2. EN 50173-3:2007/A1:2010 Information technology - Generic cabling systems - Part 3: Industrial premises
  - 14.3.3. EN 50173-4:2007/A2:2012 Information technology - Generic cabling systems - Part 4: Home
  - 14.3.4. EN 50173-5:2007/A2:2012 Information technology - Generic cabling systems - Part 5: Data Centres
  - 14.3.5. EN 50173-6:2014 Information technology - Generic cabling systems - Part 6: Distributed building services
  - 14.3.6. EN 50174-1:2009 /A1:2011 Information technology - Cabling installation- Part 1: Specification and Quality Assurance
  - 14.3.7. EN 50174-1:2009 /A1:2011 Information technology - Cabling installation- Part 2: Installation planning and practices inside buildings
  - 14.3.8. EN 50174-3:2013 Information technology - Cabling installation- Part 3: Installation planning and practices outside buildings
  - 14.3.9. EN 50346:2002/A2:2009 Information technology - Generic cabling systems - Testing of installed cabling
  - 14.3.10. ISO 11801 edition 2.2:2011 Information Technology Generic Cabling for customer premises
  - 14.3.11. ISO/IEC 14763.3:2007 Implementation and operation of customer premises cabling—Part 3: Testing of optical fibre cabling

- 14.3.12. ISO/IEC 15018:2005 Information technology—Generic cabling for homes
- 14.3.13. ISO/IEC 24702:2007 Telecommunications installations—Generic cabling—Industrial premises
- 14.3.14. ISO/IEC 11801:2002, MOD Telecommunications installations—Generic cabling for commercial premises

## **15. Overhead Work**

When undertaking overhead work such as assembly, maintenance and operation of ICT towers and masts, mounted radio equipment/antennae and overhead fibre optic or copper cables, care must be taken to prevent workers and persons passing by from falling objects. To achieve this, licensee will be required to:

- 15.1. Properly mark the area where the work is being undertaken to prevent unauthorized access;
- 15.2. Rate and maintain hoisting and lifting equipment according to the established safety procedures of the equipment;
- 15.3. Use ladders in accordance with the established procedures including proper placement, standing and use of extensions;
- 15.4. Install fixture on tower components to facilitate the use of fall protection systems, and
- 15.5. Use safety belts of not less than 16 millimeters two-in-one nylon or any material of equivalent strength plus an additional safety strap when operating power tools at height.

## **16. Underground Work**

When undertaking underground work such as trenching and construction of manholes, care must be taken to prevent damage to existing works. Further, the safety and wellbeing of workers and persons passing by must be assured. To achieve this, the licensee shall:

- 16.1. Undertake a joint survey together with telecommunications technical personnel, construction personnel, and all affected individuals to inform on the selection of the appropriate installation method, most efficient route, property issues and rights-of-ways, identification of existing facilities and where applicable, identification of fiber splice points, and land mark references;
- 16.2. Define on the final route map the depth at which the cable is to be buried;

- 16.3. Mark the route path with identification stakes or labels printed with the infrastructure owner details to caution the public, and
- 16.4. Demarcate and properly secure points where manholes are to be placed.
- 16.5. Where damage has occurred of existing infrastructure while undertaking underground cable works, the licensee shall immediately inform the affected owner and suspended the ongoing work until the matter is resolved.

## **17. Protection of ICT Infrastructure**

When undertaking ICT infrastructure works, licensees shall take all necessary precautions to ensure the protection of the ICT infrastructure as guided in the manufacturer's manuals. Further, the licensee shall follow and adhere to the following standards and recommendations:

- 17.1. EN 50310:2010 Application of equipotential bonding and earthing in buildings with information technology equipment, and
- 17.2. ITU-T Recommendations K series: Protection against interference.

## **V. OTHER LEGISLATIVE PROVISIONS**

### **18. Compliance with Other Legal Provisions**

While undertaking ICT infrastructure works, licensees shall adhere to legal provisions related to the works including:

- 18.1. Building Code (1997).
- 18.2. Local Government Regulations (1963).
- 18.3. Public Health Act.
- 18.4. Occupational Health and Safety Act, 2007.
- 18.5. Water Act, 2002.
- 18.6. Land Planning Act (CAP 403).
- 18.7. Public Roads and Roads Act (CAP 22).
- 18.8. Forests Act (CAP 385).
- 18.9. Local Government Act (CAP 265).

- 18.10. Penal Code (CAP 63).
- 18.11. Radio Protection Act (CAP 243).
- 18.12. Civil Aviation Act (CAP 394).
- 18.13. Kenya Information and Communication Act, 1998.

## **VI. EFFECT OF THE GUIDELINES**

### **19. Relationship of Licensees with the Authority**

- 19.1. Licensees shall provide reasonable cooperation and assistance to the Authority, its inspectors and other authorized personnel for the purpose of monitoring compliance with these Guidelines.
- 19.2. The licensee shall be required to submit relevant Return Forms to the Authority in accordance with licence conditions including Compliance Return Form; [Telecommunications Contractor Compliance Form Ver 7](#) and/or [Technical Personnel Compliance Return Form- Revised 2016](#) available at: <http://www.ca.go.ke/index.php/telecommunication>.

### **20. Relationship of Licensees with Their Clients**

Licensees shall be required to issue their clients with a completed and signed Completion of Works Report. The Completion of Works Report shall include at a minimum:

- 20.1. Licensee's identification details; name, licence Number, contacts etc;
- 20.2. Client details – location and contacts;
- 20.3. Equipment details where applicable;
- 20.4. Installation details including but not limited to nature of work undertaken, the material used, trunking etc;
- 20.5. Earthing values where applicable;
- 20.6. Power provision facilities, and
- 20.7. Warranty period.

## **21. Compliance with these Guidelines**

Where a licensee contravenes these Guidelines, the Authority may penalize the licensee in accordance with licence conditions, the Regulations including Regulation 19. (3) of the Kenya Information and Communications (Licensing and Quality of Service) Regulations, 2010 and the Act.

## **22. Coming into Force**

22.1. The Guidelines amend and replace the:

22.1.1. Guidelines for Supply, Installation and Maintenance of Internal Communication Infrastructure, CCK 2012 and

22.1.2. Guidelines for Supply, Installation and Maintenance of External Communication Infrastructure, CCK 2012.

22.2. The Authority may amend these Guidelines from time to time.

22.3. These Guidelines will come into effect on the date they are published in the Kenya Gazette.

**Signed**

**Director General  
Communications Authority of Kenya**