



هيئة تنظيم الاتصالات  
Telecommunications Regulatory Authority

A public consultation document issued by the  
Telecommunications Regulatory Authority of the  
Kingdom of Bahrain

*on the*

**Regulation on the Permitting, Installation and Maintenance  
of Public Radiocommunications Stations**

5 October 2016

TOD/1016/025

The address for responses to this document is:

The General Director  
Telecommunications Regulatory Authority  
PO Box 10353  
Manama  
Kingdom of Bahrain

Alternative, e-mail responses may be sent to [LAD@tra.org.bh](mailto:LAD@tra.org.bh)

The deadline for responses is 6 November 2016

Purpose: to seek stakeholders' view on a proposed new Regulation on the Permitting, Installation and Maintenance of Public Radiocommunications Stations (the "**Regulation**")

The New deadline for responses is 27 November 2016

## **PART 1: INSTRUCTIONS FOR SUBMITTING A RESPONSE**

- 1 The Telecommunications Regulatory Authority (the “Authority”)<sup>1</sup> invites comments on this consultation document from all interested parties. Comments should be submitted no later than 4pm local time on 6 November 2016.
- 2 Responses should be sent to the Authority preferably by email (either Word or PDF format) or by fax or post to the attention of:

The General Director  
LAD@tra.org.bh  
Telecommunications Regulatory Authority,  
P.O. BOX 10353, Manama, Kingdom of Bahrain

Fax: +97317532125

- 3 Responses should include:
  - the name of the responding entity;
  - the name of the principal contact person;
  - full contact details (physical address, telephone number, fax number and email address);
  - in the case of responses from individual consumers, name and contact details; and
  - a brief statement explaining the interest of the responding entity.
- 4 The Authority seeks comments from stakeholders in the telecommunications industry, government stakeholders, the business community and the general public on the proposed new Regulation on the Permitting, Installation and Maintenance of Public Radiocommunications Stations (the “Regulation”), attached at Annex 1. All comments should be supported as much as possible by detailed explanation, including, where relevant, references to the specific provisions of the Telecommunications Law<sup>2</sup> or Licenses that the respondent is relying upon.
- 5 Further, the Authority invites respondents to provide comments in response to each of the questions listed for reference at Annex 2.

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<sup>1</sup> [www.tra.org.bh](http://www.tra.org.bh)

<sup>2</sup> The Telecommunications Law of the Kingdom of Bahrain, promulgated by Legislative Decree No. 48 of 2002.

- 6 In the interests of transparency, the Authority intends to make all submissions received available to the public, subject to the confidentiality of the information received. The Authority will evaluate a request for confidentiality in line with the relevant legal provisions<sup>3</sup> and the Authority's published guidance on the treatment of confidential and non-confidential information.<sup>4</sup>
- 7 Respondents are required to mark clearly any information included in their submission that is considered confidential. Where such confidential information is included, respondents are required to provide both a confidential and a non-confidential version of their submission (in soft copies and not scanned copies). If part or all of the submission is marked confidential, reasons should be provided. The Authority may publish or refrain from publishing any document or submission at its sole discretion.

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<sup>3</sup> Including Article 23 of the Telecommunications Law

<sup>4</sup> [http://www.tra.org.bh/media/document/Confidentiality\\_Guidelines\\_Final.pdf](http://www.tra.org.bh/media/document/Confidentiality_Guidelines_Final.pdf)

## **PART 2: INTRODUCTION**

### ***Background***

- 1 The telecommunications sector is a key component of the Bahraini economy. Continued technological advancements and investments in deployment and upgrading of wireless networks have led to new and innovative services being made available to consumers over the last fifteen years. With over 2.5 million mobile subscriptions and 1.4 million mobile broadband subscribers at the end of 2015,<sup>5</sup> advanced wireless communications services have resulted in significant economic and social benefits to the Kingdom of Bahrain.
- 2 One of the key objectives of the Authority is to foster the continued development and growth of the wireless communications sector. At the same time, as it relates to the deployment and upgrade of wireless networks, the Authority is cognizant of the need to strike the right balance among the interests of residents, environmental goals, municipal planning requirements, national security and public safety objectives and the sustainable development of the wireless communications sector.
- 3 A key component of wireless communications systems are the Public Radiocommunications Stations, including Antennas and their support structures, such as Masts. Since the introduction of competition in wireless services, a significant number of Public Radiocommunications Stations have been deployed in the Kingdom of Bahrain. At present, there are approximately 1800.
- 4 A fundamental driver of wireless network deployments has been Operators' need to meet coverage obligations imposed under the terms of their Individual Mobile Telecommunications License (IMTL). Current IMTLs state that Operators must have offered licensed services to at least 99% of the population in the Kingdom of Bahrain on or before 19 June 2014.<sup>6</sup> Operators have met these requirements,<sup>7</sup> resulting in tremendous benefits to consumers.
- 5 Since the launch of wireless services in the Kingdom of Bahrain, building permits for the construction of Public Radiocommunications Stations have been issued by the relevant municipal authorities under the Building Regulation Law promulgated by Legislative Decree No. (13) of 1977, as

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<sup>5</sup> See TRA, Telecommunications Markets Indicators in the Kingdom of Bahrain, February 2016, *available at* <http://www.tra.org.bh/media/document/Telecommunications%20markets%20indicators%202015%20vF%20-%20Public%20version.pdf>

<sup>6</sup> See Individual Mobile Telecommunications license (IMTL) of Sept. 19, 2013, Schedule A.

<sup>7</sup> See TRA, Mobile Networks Coverage Audit, Kingdom of Bahrain – 2014, *available at* <http://tra.org.bh/media/document/TRA%20Mobile%20Networks%20Coverage%20Audit%20Report%20%282014%29.pdf>.

amended (hereinafter referred to as the Building Regulation Law). However, no standards specific to Public Radiocommunications Station construction and deployment have existed to guide the permitting process.

- 6 The proliferation of Public Radiocommunications Stations over the last fifteen years has resulted in increased community pressure on Municipalities and other Relevant Bodies over concerns about health effects and visual impact of these structures.
- 7 Together with a lack of suitable standards and regulatory fees for the issuance of Building Permits, such public pressure ultimately resulted in a breakdown of the process to assign municipal Building Permits for Public Radiocommunications Stations in the Kingdom Bahrain. Despite the breakdown of the permitting process, all Operators have continued deploying Public Radiocommunications Stations.
- 8 Concerted efforts to address the deployment problems have been made in recent years. In 2009, for example, the Authority attempted to encourage Mast and other Telecommunications Facilities sharing in its Wireless Telecommunications Network Facility Sharing Regulation. In 2012 a Prime Ministerial decision, which contains provisions intended to implement effective permitting processes as well as encourage infrastructure sharing and environmentally friendly deployment, was issued. However, until recently, the technical competency and enforcement powers have not been unified to tackle the challenges successfully.
- 9 Prime Minister's Decision No. (45) of August 2015 (hereafter "Decision No. (45)" of 2015) addresses this fundamental obstacle to solve the legacy permitting problems and regulate the deployment of new Public Radiocommunications Stations. Key elements of Decision No. (45) of 2015 include:
  - Appointing the Authority as the responsible entity to receive applications and coordinate with other Relevant Bodies the grant of permits for deploying new Public Radiocommunications Stations;
  - Establishing an efficient and effective permitting system;
  - Setting up a framework to classify and rectify existing Public Radiocommunications Stations that do not hold valid Permits and-or certificates, in coordination with the Relevant Bodies and in line with the applicable laws; and
  - Encouraging increased sharing practices and the use of environmentally friendly Masts, with power to approve or disapprove designs and sittings.

## ***Likely Trends***

- 10 Going forward, the Authority expects several industry and technology trends will continue to shape and modify the radio access network landscape and the types of Public Radiocommunications Stations that will likely be deployed in the Kingdom of Bahrain.
- 11 First, as the wireless market continues maturing, the Authority expects to see increased sharing of wireless infrastructure, including Sites, Masts and other support structures. Consolidation of Sites will be driven by different factors, ranging from cost saving strategies implemented by Operators to compliance with regulatory requirements imposed by the Government to promote environmental, health and safety and other public policy objectives. To a certain extent, this sharing process has already begun, and the Authority expects it to accelerate over the near term and, in particular, as a consequence of the classification and rectification process.
- 12 Second, as demand for wireless data services and applications continues to grow, Operators will increasingly deploy more dense networks by adding Small Scale Stations with limited coverage areas to their existing radio access network topology. This will allow such Operators to meet projected demand with the level of quality of service expected by consumers. At the same time, the Authority expects this trend will create additional demand for new Sites. Unlike existing Macrocell Stations, however, these Small Scale Stations will not require traditional support structures, such as Lattice Towers or Monopoles. Instead, Small Scale Stations will be deployed inside Buildings, on outer walls of Buildings and on street furniture, such as street lamps, bus stops, advertising billboards, etc.
- 13 Third, as mobile technologies continue evolving into the fifth generation of mobile systems (5G) and beyond, it is expected that network topologies will also evolve. Some of the existing support structures can be re-used for next generation networks, but Operators will need to deploy additional Public Radiocommunications Stations. For example, higher frequencies currently being considered for 5G networks, particularly spectrum bands above 6 GHz, have different propagation characteristics from International Mobile Telecommunication (IMT) bands currently in use in the Kingdom of Bahrain, resulting in reduced coverage areas of individual cells with respect to existing 3G and LTE networks. This will also create additional demand for new Sites and Small Scale Stations, further driving the process of densification of wireless networks.
- 14 Fourth, the Authority expects that as the process of densification of wireless networks moves forward and networks evolve and upgrade towards 5G systems and beyond, Public Radiocommunications Stations will increasingly become “invisible” to the public as they will be designed not

only to be smaller in scale, but also to blend seamlessly with their surroundings.

### ***The Scope of the Regulation***

15 This consultation seeks comments on the Regulation, which:

- a. sets out the rules and the processes necessary to fulfill the mandates imposed by Decision No. (45) of 2015 on the Authority and the Relevant Bodies to implement an effective permitting process for Public Radiocommunications Stations;
- b. assist Operators and their designers and contractors in successfully fulfilling all design and build responsibilities for the deployment of Public Radiocommunications Stations in a manner consistent with the Regulation; and
- c. ensure that all Legacy Public Radiocommunications Stations, that is, stations deployed prior to the coming into force of the Regulation, are duly permitted, certified and compliant with the requirements set forth in the Regulation and other applicable laws and regulations.

16 The Regulation is found in Annex 1.

## **PART 3: QUESTIONS ON THE REGULATION**

### **Chapter I**

Chapter I sets out the scope, objective and applicability of the Regulation. It is the Authority's view that the Regulation are necessary to ensure it can fully discharge the powers granted under the Telecommunications Act and the mandates imposed under Decision No. (45) of 2015.

This Chapter also provides the definitions used throughout the Regulation

#### **Questions**

1. Do you agree with the scope, objectives and applicability of the Regulation?
2. Do you agree with the proposed definitions? Which definitions would you revise? Are additional terms necessary?
3. Do you have any other comments on Chapter I of the Regulation?

### **Chapter II**

Chapter II sets out the various permits and certificates that will be required to install a Public Radiocommunications Station under the new regime. The Authority is proposing that government agencies that have heretofore required permissions for the installation of Public Radiocommunications Stations will continue to require those same permits or non-objection certificates. The only new permit will be one required by the Authority itself as provided under Article 2 of Decision No. (45) of 2015. The Chapter also sets out clearly for the first time, which permit and certificate will be required for the different types of Public Radiocommunications Stations. This typology is summarized in Schedule 7.

#### **Questions**

4. Do you agree with the characterization of which government agency is responsible for issuing each permit or certification?
5. Do you agree with treatment for Temporary Public Radiocommunications Stations and Small Scale Public Radiocommunications Stations?
6. Do you have any other comments on Chapter II of the Regulation?



## **Chapter III**

Chapter III and the accompanying Schedules 1-6 set out the six processes required for the authorization to install, upgrade and maintain a Public Radiocommunications Station in the Kingdom of Bahrain. It also restates the mandate of Decision No. (45) of 2015 making the Authority the single point of contact for the acquisition of such permits and certificates and requires Operators to make use of the Authority's Public Radiocommunications Information Management System (RIMS) as an interface to process applications and update relevant information.

Please note that these processes relate to the installation, upgrading and maintenance of new Public Radiocommunications Stations. The treatment of permitting of existing ("Legacy") Stations is handled under Article 38 of the Regulation.

Finally, Chapter III sets out the informational requirements necessary for the Authority to process all permit and certificate applications in carrying out its role as the single point of contact for the permitting process.

### **Questions**

7. Do you agree that the processes identified are necessary for the Authority to carry out its mandate under Decision No. (45) of 2015? If not, please provide details of your reasoning.
8. Do you have any suggestions or amendments to these processes that might improve their effectiveness?
9. Do you have any other comments on Chapter III of the Regulation?

## **Chapter IV**

Chapter IV sets out the Structural and Installation requirements for the deployment of Public Radiocommunications Stations in the Kingdom of Bahrain. These technical requirements apply to both existing and new Public Radiocommunications Stations. Schedule 10 sets out additional detailed technical requirements.

### **Questions**

10. Do you agree the technical requirements identified in Chapter IV and Schedule 10 are consistent with those called for under Decision No. (45) of 2015 and/or other standards required under Bahraini laws or regulations? If not, please provide details of your reasoning.
11. Do you have any suggestions or amendments to these requirements that might improve their effectiveness?

12. Do you believe that additional requirements or guidance needs to be included under the topics presented? Do you believe additional topics need to be covered under these requirements?
13. Do you have any other comments on Chapter IV and Schedule 10 of the Regulation?

## **Chapter V**

Chapter V sets out the Authority's siting and design requirements applicable to Public Radiocommunications Stations, including what types of designs will be acceptable in the various land use zones in the Kingdom of Bahrain. Schedule 8 sets out the specific design types by zoning classification. Chapter V also sets out general requirements for siting and design of Public Radiocommunications Stations that are intended to limit the negative effect on visual appearance, surrounding environment and Residents.

### **Questions**

14. Do you agree the requirements identified in Chapter V? If not, please provide details of your reasoning.
15. Do you have any suggestions or amendments to these requirements that might improve their effectiveness in achieving the objective of limiting the negative effect on visual appearance, surrounding environment, and the Residents to the lowest level possible?
16. Do you have any other comments on Chapter V of the Regulation?

## **Chapter VI**

Chapter VI in conjunction with Schedule 9 sets out the initial level and structure of fees payable to the Authority. The Chapter also indicates that the Operators are responsible for other relevant payments to the Relevant Bodies directly.

17. Do you agree with the level and structure of fees for the Authority's issuance of Final Permits and the recurring annual fees? If not, please suggest another approach to ensuring the cost recovery for the Authority's activities for permitting and compliance monitoring activity.

## **Chapter VII**

Chapter VII addresses compliance issues, in particular enforcement measures, dispute resolution processes and rectification in the case of non-compliance. Again, non-compliance here refers to non-compliance in the installation, upgrading and maintenance of new Public Radiocommunications Stations.

Treatment of non-compliance in the case of Legacy Stations is described in Article 38.

Schedules 11-14 set out the detail of the Rectification Process. Schedule 11 first describes the principles on which the rectification process will be run. Schedule 11 then sets out the phases and stages under which the process will be conducted. In each phase, the first stage involves a classification of each Legacy Station, which will determine whether the Station is subject to 1) an ad hoc review determination, 2) Fast-track permitting process or 3) remedies determination and a Full Permitting Process. Schedule 12 sets out the preferred design requirements by zone. Schedule 13 provides a timeline for the implementation of the Rectification Process; Schedule 14 sets out the documents that must be filed with a Rectification Application for a permit and/or certificate.

### **Questions**

18. Do you agree the requirements and processes identified in Chapter VII? If not, please provide details of your reasoning.
19. Do you agree with the classifications and processes identified in Schedules 11-14? If not, please provide details of your reasoning.
20. Do you have any amendments to the requirements of Chapter VII and Schedules 11-14 that might improve their effectiveness?
21. Do you have any other comments on Chapter VII and Schedules 11-14 of the Regulation?

**ANNEX 1:  
DRAFT REGULATION ON THE PERMITTING, INSTALLATION AND  
MAINTENANCE OF PUBLIC RADIOCOMMUNICATIONS STATIONS**

# DRAFT REGULATION ON THE PERMITTING, INSTALLATION AND MAINTENANCE OF PUBLIC RADIOCOMMUNICATIONS STATIONS

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# **Regulation on the Permitting, Installation and Maintenance of Public Radiocommunications Stations**

## **Chapter I: Objectives and Definitions**

### **Article 1. Scope and Objectives**

1. This Regulation implements a Public Radiocommunications Stations regulatory framework including a permitting and certification regime that allows for the planning, designing, installation, upgrading and maintenance of Public Radiocommunications Stations in compliance with the Decree No. 48 of 2002 (the “Telecommunications Law”), the Prime Ministerial Decision No. (45) of 2015 and the relevant technical, environmental, health and safety and design laws, regulations and policies of the Government of the Kingdom of Bahrain.
2. The purpose of this Regulation is to set out the rules and processes necessary to fulfil the mandate imposed by Decision No. (45) of 2015 on the Authority, the Relevant Bodies and other stakeholders and to achieve the following objectives:
  - a. Ensure adherence to unified policies and procedures to install and upgrade Public Radiocommunications Stations with the Authority acting as a single point of contact between Operators, Residents and Relevant Bodies in this process;
  - b. Ensure compliance with relevant exposure levels of Electromagnetic Fields to protect the environment and the health and safety of the public;
  - c. Set forth transparent processes to regulate the selection of the locations for the installation and the preferred types of designs of Public Radiocommunications Stations;
  - d. Ensure Relevant Bodies and Residents are notified and consulted prior to commencing the installation, upgrading or maintenance of Public Radiocommunications Stations;
  - e. Identify the types of permits and certificates to be granted by the Relevant Bodies for the installation, upgrading and maintenance of the various types of Public Radiocommunications Stations;
  - f. Establish the technical and design standards applicable for permitting or certifying Public Radiocommunications Stations;
  - g. Limit unnecessary replication of the current Public Radiocommunications Stations’ infrastructure and facilities by encouraging the shared usage of Public Radiocommunications Stations amongst Operators;

- h. Promote technological upgrade and innovation in the planning, designing, installation, and maintenance of Public Radiocommunications Stations.
3. The permitting and certification of Legacy Stations shall be conducted in accordance with the rectification procedures and principles as further described in Article 38.

## **Article 2. Application**

1. This Regulation shall apply to any Operator, or group of Operators, that intend to install, upgrade or modify Public Radiocommunications Stations in the Kingdom of Bahrain.

## **Article 3. Definitions**

1. For the purposes of this Regulation any word or expression shall have the meaning given to it in the Telecommunications Law and the following terms and expressions shall have the following meanings, unless the context otherwise requires:

**Affected Stations:** Such Legacy Station that fall within the scope of Article 1(2) of Schedule 11 of this Regulation.

**Antenna:** Any exterior transmitting or receiving device mounted on a Mast, Building or structure and used in communications that radiate or capture electromagnetic waves, digital signals, analogue signals, radio frequencies (excluding radar signals), wireless Telecommunications signals or other communication signals.

**Annual Site Planning Process:** Process conducted by the Authority in coordination with Operators and the Relevant Bodies to develop the Annual Deployment Plan as set forth in Schedule 1 of this Regulation.

**Annual Deployment Plan:** A plan issued by the Authority which shall contain the proposed deployment of Public Radiocommunications Stations for a specified annual period by location, design type, height and sharing status, as set forth in Schedule 1 of this Regulation.

**Applicant:** An Operator, or group of Operators, that has filed an application for a permit or a certificate to install, upgrade or modify a Public Radiocommunications Station.

**As Built Drawings:** Drawings submitted to the Authority following the completion of a Public Radiocommunications Station Site works in accordance with Article 5(6) of Schedule 2 of this Regulation.

**Bahraini Defence Forces (or BDF):** The responsible body for the authorities, specialties, and powers relating to Bahraini military forces.

**Building:** A structure that comports with the definition of building or villa under the Zoning Regulations.

**Building Law:** Building Regulation Law promulgated by Legislative Decree No. (13) of 1977 with its amendments.

**Building Permit:** Permit issued by the Municipality with jurisdiction in the location where the Public Radiocommunications Stations and allows the holder to undertake the activities described in Article 4(1)(b) of this Regulation.

**Camouflaged or Stealth Solution:** A Mast that is concealed or disguised to minimise its visual impact.

**Civil Aviation Affairs (or CAA):** The responsible body for the authorities, specialties, and powers relating to Civil Aviation.

**COEPP:** Committee for Organizing Engineering Professional Practices in Bahrain.

**Commercial District:** Any Area defined as such by the Authority in the Zoning Map required under Schedule 8 of this Regulation.

**Controlled Access Area:** An area within or surrounding a Site into which access must be granted or supervised by competent technical personnel of the Operator or of persons acting on behalf or representation of the Operator.

**Decision No. (4) of 2009:** The Decision issued by the Preservation of Marine Resources, Environment and Wildlife Authority with respect to Regulating and Monitoring of Non-Ionizing Radiation produced by Electromagnetic Fields.

**Decision No. (45) of 2015:** Prime Ministerial Decision No. (45) of 2015 promulgating the Regulation concerning Public Radio-communications Stations.

**Detailed Design Drawings:** Drawings submitted to the Authority at the time of application for a permit and/or certificate in accordance with Article 11 of this Regulation.

**Dispute Resolution Guidelines:** Means the Dispute Resolution Guidelines in Relation to (i) Disputes between Licensees and (ii) Complaints Against Licensees Pursuant to Chapter 17 of the Law, published 25 August 2014.

**General Directorate of Civil Defence (or GDGD):** The responsible body for the authorities, specialties, and powers relating to civil defence and public safety.

**General Public Access Area:** An area where it is reasonable to expect that the members of the general public would be able to gain free access and move about at will.

**Greenfield Site:** A ground-based Site, in which a new Public Radiocommunications Station(s), including support structure, is to be constructed.

**Exclusion Zone:** The area around an Antenna in which ICNIRP exposure guidelines are exceeded.

**Fast-track Application Process:** The expedited review process the Authority and the Relevant Bodies will undertake to review permit and/or certificate applications for certain types of Public Radiocommunications Stations as set forth in Schedule 3 of this Regulations.

**Femtocell:** A low power Public Radiocommunications Station, based on wireless cellular technology, providing wireless voice and broadband services within a limited range inside a home or office environment. Coverage is typically considered to be smaller than that of a Picocell,

**Final Permit:** The permit issued by the Authority for each Public Radiocommunications Station in accordance with the terms and conditions set forth in Article 5 of this Regulation.

**Fining Guidelines:** The guidelines established for setting the amount of a fine for violations of Articles 35 and/or 65 of the Telecommunications Law of the Kingdom of Bahrain issued by the Authority on 16 March 2014, as may be amended from time to time.

**Full Permit Application Process:** Review process carried out by the Authority and the Relevant Bodies to grant permits and/or certificates to install new Public Radiocommunications Stations, which shall be conducted pursuant to Schedule 2 of this Regulation.

**Guyed Mast:** Any variety of Mast using wire guys connecting above grade portions of the Mast diagonally with the ground or the structure on which the Mast is placed.

**ICNIRP:** International Commission on Non-Ionizing Radiation Protection.

**Industrial/Factory Area:** Any Area defined as such by the Authority in the Zoning Map required under Schedule 8 of this Regulation.

**Lattice Mast:** A Mast which consists of a network of vertical and horizontal supports and crossed metal braces, forming a Mast which is usually triangular or square in cross-section.

**Legacy Stations:** Public Radiocommunications Stations constructed prior to the effective date of implementation of this Regulation.

**Macrocell:** A station that provides the largest area of coverage within a wireless network. Its Antennas can be mounted on ground-based, rooftop or other existing Masts, and must be high enough to avoid obstruction. Macrocells provide radio coverage over varying distances, depending on the frequency used, the traffic and the physical terrain.

**Major Road:** Any road defined as such by the Authority in the Zoning Map required under Schedule 8 of this Regulation.

**Mast:** Any wireless communication support structure which can be ground-based, deployed on any vertical surface or nearly vertical surface or on rooftops.

**Microcell:** a low power Public Radiocommunications Station, extending coverage to a limited area such as a mall, hotel, or transportation hub. Coverage is typically considered to be larger than that of a Picocell.

**Monopole:** A Mast consisting of a single pole to support Antennas and connecting appurtenances.

**Municipalities:** Capital Secretariat and relevant Municipalities.

**No Objection Certificate:** Certificates issued by each of the Relevant Bodies which determine compliance with security, health and safety, environmental, and aviation requirements, as the case may be, in accordance with Article 4 of this Regulation.

**On-going Compliance Review Process:** Annual review process conducted by the Authority to ensure that all Public Radiocommunications Stations comply with the provisions set forth under Decision No (45) of 2015, this Regulation, the Telecommunications Law, and all other related decisions issued by the Authority and the Relevant Bodies, as set forth in Schedule 6 of this Regulation.

**Operator:** A Public Telecommunications Operator as defined by the Telecommunication Law.

**Picocell:** A small Public Radiocommunications Station used to extend or enhance wireless coverage in a Building or an outdoor hotspot. Coverage is typically considered to be smaller than that of a Microcell.

**Places of Interest:** Any Areas defined as such by the Authority in the Zoning Map required under Schedule 8 of this Regulation.

**Public Engagement Process:** Process directed at consulting Residents prior to the installation of Public Radiocommunications

Stations, which shall be conducted pursuant to Schedule 4 of this Regulation.

**Rectification Application:** An application relating to the classification and proposed rectification of each Legacy Station made by an Operator to the Authority in accordance with the requirements, principles and processes set out in Schedules 10 to 14 of this Regulation.

**Regulation:** The Regulation on the Permitting, Installation and Maintenance of Public Radiocommunications Stations.

**Relevant Bodies:** Any official competent bodies, apart from the Authority, whose approval is required for the installation of a Public Radiocommunications Station, including the Capital Secretariat and Municipalities, the Supreme Council for Environment, Civil Aviation Affairs, Urban Planning, security and military bodies, as the case may be.

**Residential/Housing Area:** Any area defined as such by the Authority in the Zoning Map required under Schedule 8 of this Regulation.

**Residents:** Individuals and businesses residing in Buildings located within a two hundred (200) metre radius around the locations of a Public Radiocommunications Station or a Temporary Public Radiocommunications Station.

**Restricted Access Area:** An area within or surrounding a Site, into which the general public does not have access, but may be visited by non-Operator third parties for roof maintenance or other work.

**RIMS:** Radiocommunications Station Information Management System

**Road Occupation Permit:** Permit issued by the relevant Municipality which authorizes the installation of certain types of Public Radiocommunications Stations, as defined under Article 4(4) of this Regulation.

**Rooftop Mast:** A Mast, which is a) attached or affixed to any structure that is not specifically constructed for the purpose of supporting an Antenna, and b) does not satisfy the definition of Wall Mount or Stub Masts.

**Rural Locations/Low Populated Area:** Any Area defined as such by the Authority in the Zoning Map required under Schedule 8 of this Regulation.

**Service Installation Code:** Code of Practice for Service Installation as issued by the Central Planning Office of the Ministry of Works, Municipalities Affairs and Urban Planning.

**Sharing Regulation:** The Regulation on the Wireless Telecommunications Network Facility Sharing issued by virtue of Resolution No. (7) of 2009.

**Shelter:** An enclosure accommodating Radiocommunication Equipment used in the operation of a Public Radiocommunications Station.

**Site:** A leased area, site easement area or lot of record upon which a Public Radiocommunications Station is or will be located.

**Site Sharing Process:** The processes for the sharing of Public Radiocommunications Station as set forth in Schedule 5 of this Regulation.

**Small Scale Station:** A compact station containing an Antenna that provides a smaller coverage area than a Macrocell. Small Scale Stations include Microcells, Picocells, and Femtocells.

**Standard Specifications for Construction Works:** Standard Specifications for Construction Works, Health and Safety as issued by the Ministry of Works, Municipalities Affairs and Urban Planning.

**Streetworks:** A short Mast—typically less than 10 meters in height—that is attached to or made to look like a lamppost, utility pole or other street furniture.

**Stub Mast:** A roof-mounted Mast structure which supports multiple Antennas at a height where it can satisfactorily send and receive radio waves. A Stub Mast does not exceed 6 meters in height.

**Supreme Council of the Environment (or SCE):** The body responsible for the protection of environment and wildlife.

**Telecommunications Infrastructure Guidelines:** The Guidelines for Telecommunications Infrastructure Deployment as issued by the Authority.

**Temporary Public Radiocommunications Station or Cell site on Wheels (or COWs):** A Public Radiocommunications Station that can be located on a truck, trailer or other vehicle or moveable platform, designed to be used as a temporary part of a cellular network, to be deployed for special events or emergency situations.

**Underground Utilities:** any underground facilities for electricity, gas, water, waste water, or Telecommunications services or other similar utilities.

**Viewshed:** Geographical area that has visibility to the Public Radiocommunications Station and/or its Mast.

**Wall Mount:** a Mast or Antenna that is mounted on any vertical surface or nearly vertical surface of a Building or other existing structure that is not specifically constructed for the purpose of supporting an Antenna. This may include, for example, the exterior walls of a Building, an existing parapet, the side of a water tank, or the side of a freestanding sign, such that the highest point of the Antenna is at an elevation equal to or lower than the highest point of the surface on which it is mounted.

**Worker:** any person who is employed by or on behalf of the Operator and is duly trained to perform works at a Public Radiocommunications Station.

**Zoning Regulations:** Prime Ministerial Decision No. (28) of 2009 with respect to the Issuance of Zoning Regulations for Construction in Various Areas of the Kingdom.

## **Chapter II: Permitting and Certification Requirements**

### **Article 4. Types of permits and certificates required to install Public Radiocommunications Stations**

1. Pursuant to applicable laws and regulations, the installation, upgrading and maintenance of Public Radiocommunications Stations shall require obtaining one or more of the following permits and/or certificates in accordance with this Chapter and Schedule 7:
  - a. A Final Permit issued by the Authority, which permits the installation, upgrading and maintenance of Public Radiocommunications Stations;
  - b. A Building Permit issued by the Municipality with jurisdiction in the location where the Public Radiocommunications Stations will be installed, which allows the holder to erect a Building or undertake works; undertake an addition thereon or demolish all or part thereof; undertake any amendment in expansion, height or support on the exterior or interior as well as amend land by digging or piling as determined by the Building Regulation Law, as amended;
  - c. A Road Occupation Permit issued by the Municipality with jurisdiction in the area where the Public Radiocommunications Stations will be installed, which authorizes the installation of certain types of Public Radiocommunications Stations, as defined under section 4 below;
  - d. A No Objection Certificate issued by the Civil Aviation Affairs, which authorizes the establishment of installations or obstacles in the areas covered by aerial easement rights or other areas where the height of such installations or obstacles may affect air



navigation, and the modification in the installations or Buildings located in such areas covered by aerial easements, as determined under the Civil Aviation Law, 2013 and other applicable regulations;

- e. A No Objection Certificate issued by Bahrain Defence Forces, which consists of an approval of the concerned military for the installation of Public Radiocommunications Stations, based on specifications relating to Antennas, Masts and Telecommunications Facilities;
  - f. A No Objection Certificate issued by the Supreme Council of the Environment, which determines compliance with Non-Ionizing Emissions Limits produced by Electromagnetic Fields as provided under Resolution No. (4) of 2009; and
  - g. A No Objection Certificate issued by General Directorate of Civil Defence, which consists of an approval for the installation of Public Radiocommunications Stations, based on specifications relating to public health and safety concerns.
- 2. Final Permits issued by the Authority shall be required for all Public Radiocommunications Stations including Small Scale Stations located inside Buildings.
  - 3. Municipal Building Permits shall not be required where the Public Radiocommunications Station does not constitute a structure subject to the Building Regulation Law, as amended, provided, however, that a Municipality shall review the deployment of any Telecommunications Facility on the roof of a Building to ensure that such Telecommunications Facility, in combination with other appurtenances, does not exceed the allowable limits of the roof area per the Zoning Regulations.
  - 4. Road Occupation Permit from Municipalities shall be required for Streetworks and Temporary Public Radiocommunications Stations deployed on public roads.
  - 5. No Objection Certificates from the Civil Aviation Affairs shall be required for:
    - a. All Public Radiocommunications Stations located within an area classified by Civil Aviation Affairs as an aerial easement;
    - b. All Public Radiocommunications Stations which are over 30 meters in height above sea level, independent of their location within the Kingdom of Bahrain; and
    - c. All Public Radiocommunications Stations which are over 15 meters within 6km of an area classified by Civil Aviation Affairs as a runway.

6. No Objection Certificates from the Bahraini Defence Forces shall be required for all Public Radiocommunications Stations, except Stub Masts, Wall Mounts, Temporary Public Radiocommunications Stations, Streetworks, and Small Scale Stations.
7. No Objection Certificates from the Supreme Council of the Environment shall be required for all Public Radiocommunications Stations except Small Scale Stations located inside Buildings.

#### **Article 5. Final Permit**

1. Upon successful completion of the application process, the Authority shall issue the Operator a Final Permit, which shall provide the Authority's approval and aggregate all other applicable permits and certificates required for the specific Public Radiocommunications Station in accordance with Article 4.
2. The Final Permit will not have a specific duration but is subject to on-going annual self-accreditation as set out in Schedule 6.
3. If the Authority determines that a Public Radiocommunications Station becomes non-compliant with this Regulation, the Authority may:
  - a. Revoke the Final Permit and require decommissioning and removal at the Operator's expense; or
  - b. Require the Operator to engage in remedial action as specified by the Authority.

#### **Article 6. Temporary Public Radiocommunications Stations**

1. Operators may install Temporary Public Radiocommunications Stations as provided in this Regulation in the following circumstances:
  - a. During emergency situations to ensure service in affected areas and for a period of no more than six (6) months as determined by the Authority in accordance with section 2;
  - b. For special events to provide service for a period of no more than sixty (60) calendar days in accordance with section 3; and
  - c. For Site upgrading to provide continuity of service in the event that an existing permanent station is taken out of service to facilitate a Site upgrading in accordance with section 4.
2. In case of emergencies, Temporary Public Radiocommunications Stations shall:

- a. Be located as close as possible to the previously existing, but unserviceable Public Radiocommunications Station(s), where operationally practicable;
  - b. Not exceed the height of the previously existing, but unserviceable Public Radiocommunications Station(s); and
  - c. Be promptly removed within six (6) months of commencement of use or when the need for use ceases, whichever occurs first.
3. In case of special events taking place in areas with limited or insufficient network capacity, Operators may install Temporary Public Radiocommunications Stations to provide connectivity to temporary users. Special events may include, among others:
  - a. Outdoor gatherings;
  - b. Conferences, seminars or government events;
  - c. Festivals and sporting events; or
  - d. Construction sites.
4. For Site upgrading, Temporary Public Radiocommunications Stations shall:
  - a. Be located as close as possible to the previously existing, but unserviceable Public Radiocommunications Station(s), where operationally practicable;
  - b. Not exceed the height of the previously existing, but unserviceable Public Radiocommunications Station(s); and
  - c. Be promptly removed within six (6) months of commencement of use or when the need for use ceases, whichever occurs first.
5. In relation to Temporary Public Radiocommunications Station, Operators shall take all practicable measures to limit to the lowest possible level the negative effect on visual appearance, surrounding environment, and Residents.
6. When a Temporary Public Radiocommunications Station is no longer needed or the maximum period of their use has expired, they must be removed by the Operator and the land must be restored to its former condition at the Operator's expense. Failure to comply with this obligation shall result in enforcement actions by the Authority in accordance with Chapter VII.

## **Article 7. Small Scale Stations deployed inside Buildings**

1. Notwithstanding the exception set forth in Article 4(7), Operators shall:
  - a. File an application with the Authority for the deployment of Small Scale Stations located inside Buildings under the Fast-track Permit Application Process in accordance with Schedule 3;
  - b. Certify that such station is compliant with the standards set forth in Resolution No. (4) of 2009; and
  - c. Include such Small Scale Stations in the self-accreditation pack for the On-going Compliance Review Process set forth under Schedule 6.

### **Chapter III: Processes to Issue Permits and Certificates**

#### **Article 8. Processes established in this Regulation**

1. This Regulation sets forth the following processes that the Authority, in coordination with the Relevant Bodies, shall undertake to ensure that Public Radiocommunications Stations are installed, upgraded and maintained in compliance with the technical, environmental, health and safety and design standards of the Government of the Kingdom of Bahrain:
  - a. Annual Site Planning Process for Public Radiocommunications Stations, which shall be conducted pursuant to Schedule 1;
  - b. Full Permit Application Process to install new Public Radiocommunications Stations, which shall be conducted pursuant to Schedule 2;
  - c. Fast-track Permit Application Process, which shall be conducted pursuant to Schedule 3;
  - d. Public Engagement Process, which shall be conducted pursuant to Schedule 4;
  - e. Site Sharing Process, which shall be conducted pursuant to Schedule 5; and
  - f. On-going Compliance Review Process, which shall be conducted pursuant to Schedule 6.

#### **Article 9. Single point of contact**

1. The Authority shall act as the single point of contact between Operators and Relevant Bodies to effectively facilitate obtaining the necessary

permits and certificates for the installation, upgrading and maintenance of the Public Radiocommunications Stations.

2. The Authority and the Relevant Bodies shall comply with the relevant timeframes set forth in the Schedules identified in Article 8(1).
3. The Authority shall enter into separate memoranda of understanding with the Municipalities, the Civil Aviation Affairs, the Supreme Council of the Environment and the Bahraini Defence Forces to ensure effective implementation of its single point of contact functions and facilitate compliance with the processes and standards set forth in this Regulation.
4. Notwithstanding the provisions of section 1, Applicants shall pay relevant fees for the issuance of permits and certificates directly to the concerned Relevant Bodies.

#### **Article 10. Radiocommunications Station Information Management System**

1. The Authority shall set up a RIMS, which shall allow the Operators to make preliminary pre-approval requests, apply for permits and certificates for the installation and upgrading of Public Radiocommunications Stations, and file self-accreditation packets of Public Radiocommunications Stations online.

#### **Article 11. Permit applications for Public Radiocommunications Stations**

1. Operators shall submit their permit and/or certificate applications using the RIMS.
2. Operators shall provide the Authority or Relevant Bodies as part of the necessary permit and/or certificate applications for the installation of Public Radiocommunications Stations the following information:
  - a. A written explanation of the scope of work to be carried out, if necessary;
  - b. A declaration that the proposed Site conforms to the requirements of Decision No. (4) of 2009 and ICNIRP requirements;
  - c. Supporting documents proving that sharing existing Public Radiocommunications Stations has been considered before applying for installation of a new Public Radiocommunications Station;
  - d. Details of the discussions or consultations, if any, with any party;

- e. The report referred to in Article 32(1)a of this Regulation, as applicable; and
  - f. Any additional information pursuant to the requirements in Schedule 10 of this Regulation and guidance recommended in any guidelines that may be issued by the Authority in respect to the permit process.
3. For each Public Radiocommunications Station Operators shall submit the set of drawings mentioned below:
- a. Site Location Plan (with a scale of 1:2500 as a maximum or any other suitable scale for the Site area), which shall include as a minimum the following:
    - i. General location with the area marked in black colour.
    - ii. Position of the station within 100 meters from the Site.
    - iii. Access and adjacent roads to the Site.
  - b. Station Layout/Design Plan (with a scale of 1:500 as a maximum), which shall show the following:
    - i. Site boundaries.
    - ii. Intended landscaping.
    - iii. Means of access to the Site.
  - c. Architectural Drawings (with a scale of 1:100 as a maximum), which shall show the following:
    - i. Floor plans, if any.
    - ii. Front elevations with the external appearance of the equipment and Shelters with the proposed colours.
    - iii. Cross sections of the station with details of height and level, if any.
    - iv. Structural drawings of the foundations and floors.
    - v. Electrical, mechanical and water connections drawings with the necessary details.
  - d. Roof Plans (applying to projects with installation of Rooftop Masts; a scale of 1:100 is suitable), which shall show the following:
    - i. Complete roof of Building.
    - ii. Details of the existing and proposed equipment including Antennas, Shelter, access channels and air conditioning equipment.
4. Operators shall engage highly qualified engineers for the planning and design of Public Radiocommunications Stations. Operators shall also use engineering firms accredited by the COEPP for the preparation of

engineering drawings and required structural calculations that must be submitted to obtain the requisite permits and certificates.

#### **Article 12. Accuracy of information**

1. Operators shall provide accurate information to the Authority, the Municipalities and other Relevant Bodies in the Annual Site Planning Process and permit applications for the installation or upgrading of Public Radiocommunications Stations in order to expedite the permitting and certification processes.

#### **Article 13. Reporting**

1. In addition to the reporting required as part of the self-accreditation process set out in Schedule 6, Operators are required to maintain up-to-date information relating to their Public Radiocommunications Stations in the RIMS.
2. Operators shall report to the Authority within twenty-four (24) hours of first learning of any incident related to their Public Radiocommunications Stations that may represent a safety or health hazard to the public.

#### **Article 14. Public Complaints Management**

1. Operators shall put in place an effective complaints handling system to resolve complaints of the public regarding Public Radiocommunications Stations within a reasonable time, but not more than ten (10) working days from the date of the submission of the complaint.
2. In such cases where a complaint is not resolved within the timeframe set forth in section 1, the Authority shall resolve the complaint upon request from the complainant utilizing a process consistent with Article 55 of the Telecommunications Law.
3. Operators shall keep a record of complaints regarding each Public Radiocommunications Station, including the date of the complaint, the nature of the complaint and how the complaint was resolved. These records are to be stored in the RIMS for the period in which such station is in operation.

#### **Article 15. Deadlines on holidays or weekends**

1. When the date of a deadline set forth in this Regulation or its Schedules falls on a weekend or a holiday, such deadline shall be deemed automatically extended to the next working day.

### **Chapter IV: Design and Build Specifications**

## **Article 16. Adherence to best engineering practice and international standards**

1. Public Radiocommunications Stations shall comply with internationally recognized standards and with laws and the best engineering practices and conditions applicable in the Kingdom of Bahrain.
2. Operators will discharge their obligations under paragraph 1, in accordance with the requirements, principles and processes set out in this Regulation and in Schedule 10.
3. In case an Operator considers that it must deviate from the requirements, principles and processes set out in Schedule 10 for the deployment or upgrade of a Public Radiocommunications Station, the Operator must provide reasoned justification for its decision to the satisfaction of the Authority. At its sole discretion, the Authority may reject such justification and require the Operator to comply with the principles and processes set out in Schedule 10 as a condition for issuing the Final Permit.

## **Article 17. Health, Safety and Security Standards**

1. Operators shall ensure safety and security precautions are taken when constructing, installing and maintaining all Public Radiocommunications Stations.
2. Operators and third parties contracted to construct, install and maintain Public Radiocommunications Stations shall:
  - a. Where possible locate equipment in a position that is safe to access, thus avoiding the use of ladders, access systems and or the need to work at height;
  - b. Place all equipment in close proximity, where such placement is possible and is safer to other alternatives;
  - c. Consider the prevailing weather conditions when placing Shelters and equipment to provide maximum cover from the elements while working on the Sites;
  - d. Avoid the requirement for steps up to Shelters and, where unavoidable, ensure that there is adequate work space with handrails or fall arrest systems;
  - e. Ensure that the rotation of equipment support structure, under the influence of wind loading, is limited to a maximum of 0.5 degrees, unless in specific circumstances the Operator certifies that safety will not be jeopardized by a larger rotation angle;



- f. As a minimum, ensure that Masts are designed to withstand the local environmental weather conditions under maximum equipment loading conditions as specified by the Operator. It is essential that local topography and in particular the slope of the surrounding terrain is factored into the design support calculations, as required within the most up to date engineering design standards;
  - g. Design the foundation for Mast to ensure that the superstructure can be fully utilized;
  - h. Design the foundation for Masts for a factor of safety of two against overturning. The applied bearing pressure must not exceed the allowable soil bearing pressure as measured by the relevant soil investigation;
  - i. Ensure that the earthing and lightning protection systems on all Sites will comply with the requirements of BS EN 62305: Standard for lightning protection;
  - j. Comply with the health, safety and security requirements set forth under this Regulation and other applicable rules and guidelines issued by the Authority;
  - k. Adherence to the applicable safety and firefighting standards as issued by the General Directorate of Civil Defence; and
  - l. Adherence to the Site security and anti-climbing standards as required by the General Directorate of Civil Defence.
3. Warning signs visible to the public shall comply with the standards set forth under this Regulation.

#### **Article 18. Environmental Standards**

1. Operators shall design their Public Radiocommunications Stations to ensure that the Electromagnetic Fields emitted and the installation procedures employed are within the permissible standards as dictated by Decision No. (4) of 2009, comply with the recommendations determined by the ICNIRP and adhere to the radio frequency exposure compliance requirements set forth under Schedule 10 of this Regulation.
2. The emissions from all existing and future Radiocommunications equipment of all the Operators at the Site where a Public Radiocommunications Station is deployed and the surrounding area shall be taken into account when determining compliance with Decision No. (4) of 2009.
3. Operators shall take the necessary measures to:

- a. Immediately repair or remove any Telecommunications Facility which is not in compliance with the provisions of Decision No. (4) of 2009 and the ICNIRP standards pursuant to a determination made by the Authority in consultation with the Supreme Council of the Environment.
  - b. Prevent technically unqualified personnel from being within the exclusion zone of a Public Radiocommunications Station emitting electromagnetic waves in accordance with the requirements of Decision No. (4) of 2009 and the relevant provisions of Schedule 10 of this Regulation.
  - c. Train their technical staff working on Public Radiocommunications Stations and make them aware of all possible safety hazards and precautionary measures.
4. Operators shall operate their Public Radiocommunications Stations in a manner which ensures that:
    - a. The radio frequency power outputs are kept to the lowest levels possible for effective service; and
    - b. Their Public Radiocommunications Stations do not interfere with other Radiocommunications services.

#### **Article 19. Civil Aviation Standards**

1. Operators shall design and construct their Public Radiocommunications Stations in accordance with the air navigation safety requirements and specifications applied by the Civil Aviation Affairs and the principles and processes set out in Schedule 10 of this Regulation.
  - a. Operators shall install in all high-rise support structures used for Public Radiocommunications Stations warning lights or shall paint them to reduce the hazards which may be caused by such facilities to air navigation. These support structures include all ground-based Masts that are 15 meters or more above sea level in height.
  - b. Operators shall use warning lights with a suitable power and intensity to be visible to air navigation during day and night. Such lights shall conform to the specifications applied by Civil Aviation Affairs.
2. Pursuant to the yearly certification process detailed in Schedule 6, Operators shall provide the Authority with as-built measurements of heights and coordinates according to the WGS-84 System for high-rise support structures in all existing and newly constructed Public

Radiocommunications Stations to guarantee the accuracy of data which ensures safe air navigation.

#### **Article 20. Ground and road traffic safety**

1. Operators shall take into consideration traffic safety and planning authorities' requirements when designing and constructing a Public Radiocommunications Station and, to that effect, shall comply with the relevant principles and processes set out in Schedule 10 of this Regulation.

#### **Article 21. Structural designs**

1. All structural and civil designs must comply with the following Eurocodes and national standards on these matters that may be adopted from time to time:
  - a. I.S.EN1990 Eurocode 0: Basis of structural design;
  - b. I.S.EN1991 Eurocode 1: Actions on structures;
  - c. I.S.EN1992 Eurocode 2: Design of concrete structures;
  - d. I.S.EN1993 Eurocode 3: Design of steel structures;
  - e. I.S.EN1994 Eurocode 4: Design of composite steel and concrete structures;
  - f. I.S.EN1995 Eurocode 5: Design of timber structures;
  - g. I.S.EN1996 Eurocode 6: Design of masonry structures;
  - h. I.S.EN1997 Eurocode 7: Geotechnical design;
  - i. I.S.EN1998 Eurocode 8: Design of structures for earthquake resistance; and
  - j. I.S.EN1999 Eurocode 9: Design of aluminium structures
2. Operators shall ensure that each Public Radiocommunications Station complies with the most up to date version of the codes identified in section 1 and shall comply with the relevant requirements, principles and processes set out in Schedule 10 of this Regulation.

#### **Article 22. Identification of Operator and Advertising on Sites**

1. A billboard including the Operator's name and contact details in cases of emergencies shall be installed on all sides of the Public

Radiocommunications Stations. The size of the billboard shall not be less than 400mm x 400mm.

2. Advertising boards or other advertising means shall not be placed on or inside the Site without obtaining a prior approval from the relevant Municipality.

### **Article 23. Height of Public Radiocommunications Stations**

1. Subject to sharing requirements, the height of Masts should not exceed the height required to satisfy operational requirements and Operators' legal obligations.

### **Article 24. Site for the installation of Public Radiocommunications Stations**

1. The area and size of the Public Radiocommunications Stations shall meet the Operator's operational requirements and provide a suitable level of safety and security arrangements for the station.
2. The construction area of the Masts and other Telecommunications Facilities shall comply with the allowed construction area percentages applicable to the different zoning classifications pursuant to the Zoning Regulations.
3. A setback distance shall be maintained from the Site's fencing wall to each of the walls of the Public Radiocommunications Station, Masts and other equipment equal to that specified by the Zoning Regulation applicable to the land in use. The setback distance shall not be less than two (2) meters.

### **Article 25. In-building Telecommunications Facilities**

1. The Authority shall coordinate with the Municipalities and other Relevant Bodies to ensure that construction companies and property developers install Telecommunications Facilities and in-building cables at commercial and Residential premises.
2. In-building facilities shall be shared between Operators to facilitate deployment of Small Scale Stations and ensure internal coverage within Buildings.

## **Chapter V: Siting and Design Standards**

### **Article 27. Radiocommunications Stations of appropriate appearance**

1. The designs for new Public Radiocommunications Stations proposed by Operators shall be of appropriate appearance and shall limit the negative

effect on visual appearance, surrounding environment, and Residents to the lowest level possible.

2. Proposed designs shall be deemed of appropriate appearance by the Authority and the Municipalities if they conform to one or more of the preferred design options set forth in Schedule 8 for the specific zoning classification of the land where the Public Radiocommunications Station is to be installed.
3. To assist the Authority and the Municipalities in determining the most suitable design for a particular Site, Operators shall provide in their permit applications at least three (3) alternative designs for the Public Radiocommunications Station that conform with Schedule 8.
4. In the event of limited technical solutions that do not permit compliance with at least one of the preferred design options for a specific Public Radiocommunications Station pursuant to Schedule 8:
  - a. Operators shall provide the Authority with at least three (3) alternative designs, with a detailed explanation of their design and appearance and all mitigation measures proposed to limit the impact of the Public Radiocommunications Station on the surrounding environment.
  - b. The Authority and the relevant Municipality, shall determine during the permitting and certification process whether to accept or reject the proposed designs.
  - c. In case of rejection, the Authority shall provide sufficient reasoning for the decision and indicate to the Operator alternatives for the design or siting of the Public Radiocommunications Station.

#### **Article 28. General options for siting and design**

1. When planning the design and siting of a new Public Radiocommunications Station, Operators shall take the following main alternatives into consideration:
  - a. Sharing Public Radiocommunications Stations;
  - b. Using Small Scale Station or Camouflaged or Stealth Solutions;
  - c. Installation of Wall Mounted Antennas or Stub Masts;
  - d. Erecting new, self-standing ground support structures; and
  - e. Erecting Rooftop Masts on roofs of existing Buildings and structures taking into consideration the general scenery and

concealing or camouflaging Radiocommunications Equipment wherever possible.

2. The alternatives described in section 1 shall be assessed by Operators in conjunction with the preferred design options for the specific zoning classification of the land where the Public Radiocommunications Station is to be installed as provided in Schedule 8.

#### **Article 29. Obligation to minimize visual impact on surrounding environment**

1. Operators shall minimize the effect of the Public Radiocommunications Stations and their designs on the general scenery of the surrounding environment.
2. To achieve the objective set forth in section 1, Operators shall carry out the following:
  - a. Conceal Radiocommunications Equipment and devices inside Buildings or inside suitable fiberglass or other material covers;
  - b. Camouflage Radiocommunications Equipment and devices with other shapes like trees, road facilities, Streetworks or any other public artwork, in line with the general appearance;
  - c. Use fully concealed Antennas and Small Scale Stations whenever possible in inhabited areas;
  - d. Use the most suitable preferred design option in accordance with Schedule 8; and
  - e. Place new Public Radiocommunications Stations near or between trees or consider the possibility of planting trees or plants within the Site.

#### **Article 30. Colours and materials**

1. The designs of new Public Radiocommunications Stations as well as the materials and colours used in their construction shall be consistent with the surrounding environment, whenever possible.
  - a. Where Masts are extended upwards, an Operator shall paint them with a suitable non-reflective colour such as pale grey.
  - b. Where the Public Radiocommunications Station, including Masts, equipment or Antennas, are set against a background levelled ground or a group of trees, the suitable colour may be coarse beige or dark green.

2. Outdoor Shelters shall be compatible with the rest of the facilities of a Public Radiocommunications Station and painted with colours that match its external surroundings in order to minimize colour contrast.
3. The Operators shall ensure that the colour of any fence or boundary wall erected surrounding the Site matches its geographical surrounding.

### **Article 31. Siting of Radiocommunications Stations**

1. Operators shall select Public Radiocommunications Station locations in areas that:
  - a. Do not raise valid concerns or objections of its Residents; and
  - b. Are able to meet their coverage requirements provided for in the relevant Telecommunications Licenses issued the Authority.
2. Operators shall provide sufficient and convincing written justifications when selecting Sites that may raise valid concerns or objections from Residents as detailed in the process for public engagement set forth in Schedule 4.
3. When proposing alternative Sites for deployment of Public Radiocommunications Stations as part of the Annual Planning Process detailed in Schedule 1, Operators shall survey all possibly suitable Sites within the search area and shall submit a detailed report to the Authority that shall include:
  - a. An evaluation of all proposed Site options which may be implemented with recommendations relating to the relative merits of each proposed Site; and
  - b. A preferred Site for the construction of the new Public Radiocommunications Station for approval by the Authority in consultation with the Relevant Bodies
4. In all cases, when proposing Sites for the installation of Public Radiocommunications Stations Operators shall demonstrate compliance with the following requirements:
  - a. Access to the Site shall be convenient through a public road for the purpose of construction, repair and regular maintenance works.
  - b. Availability of an appropriate electrical power source close to the Site.
  - c. The Site shall be appropriate for meeting the technical requirement for installing a new Public Radiocommunications Station whether for increasing the coverage area, providing

additional capacity in a congested area or for strengthening existing poor coverage.

- d. The Site provides a safe working environment for the operation and maintenance staff in accordance with the applicable safety standards set forth pursuant to Article 17.
- e. The proposed Site should avoid locating Masts and accompanying facilities over Underground Utilities.

### **Article 32. Rooftop Sites**

1. Where Operators intend to install a Public Radiocommunications Station on the rooftop of an existing Building or structure, they shall:
  - a. Submit to the Authority and the Municipalities with the permit application a technical report prepared by an engineering office accredited by the COEPP confirming that the Building or structure is capable of sustaining weights of the new equipment that the Operator intends to add.
  - b. Ensure that the equipment deployed has a minimal impact on public scenery.
2. Rooftop Sites must be designed to minimize the requirement for working at height throughout the life of the Site, from initial build until decommissioning. Operators must comply with specific requirements on Rooftop Site design established in Article 5 of Schedule 10.

### **Article 33. Site sharing**

1. In accordance with the Sharing Regulation, Operators shall make the required efforts to ensure the sharing of existing Public Radiocommunications Stations in order to optimize the use of existing stations and avoid replication of Public Radiocommunications Stations.
2. Operators shall work towards the sharing of Public Radiocommunications Stations in order to maintain the public scenery, whenever such sharing is the optimum solution.
3. Subject to the Authority's discretion, the following cases may be excluded from the provision of section 2:
  - a. If the level of Electromagnetic Fields emitted from the Public Radiocommunications Station is higher than the permitted levels pursuant to Decision No. (4) of 2009 and its future amendments.
  - b. If sharing or upgrading the existing Public Radiocommunications Station will have a greater negative effect on the general scenery than increasing the number of such stations.



- c. Existence of technical constraints that prevent the installation of additional Radiocommunications equipment, including, but not limited to, harmful interference.
- d. Poor location of existing Public Radiocommunications Stations or when the height of such stations is insufficient for the provision of the required coverage.
- e. Inability of the existing Mast structure to safely hold additional equipment.
- f. Existing power connections are unable to supply the requesting Operator's Radiocommunications equipment and facilities with the required power supply.
- g. Other reasons that, in the opinion of the Operators may prevent the sharing of the Public Radiocommunications Stations. Such reasons shall be subject to the Authority's approval.

## **Chapter VI: Fees**

### **Article 34. Applicable fees**

- 1. Operators shall pay the relevant fees due to the Authority in accordance with in Schedule 9 and Article 5 of Schedule 11.
- 2. Operators shall pay applicable fees due to the Relevant Bodies directly to them and demonstrate such payments to the Authority as set forth in Schedule 2 and Schedule 3 in order to obtain the Final Permit from the Authority.

## **Chapter VII: Enforcement Measures**

### **Article 35. Enforcement actions for non-compliance**

- 1. The Authority may take enforcement actions in case an Operator fails to comply with the provisions of this Regulation. Enforcement actions shall be taken in relation to matters within the scope of the Authority's legal mandate and pursuant to its powers under Articles 35 and 65 of the Telecommunications Law. Such actions may consist of one or more of the following:
  - a. Directions to Operators to prevent or rectify non-compliance;
  - b. The imposition of a fine suitable to the compliance violation;

- c. Directions to Operators to remove a Public Radiocommunications Station; and
  - d. Revocation of a license in accordance with Article 35 of the Telecommunications Law.
2. In the case that the Authority imposes fines for failure to comply with the provisions of this Regulation, it shall do so in accordance with the Fining Guidelines.
3. The Authority shall enforce compliance with this Regulation pursuant to the powers to conduct inspections and supervision procedures established under Article 77 of the Telecommunications Act.

### **Article 36. Resolution of Disputes between Operators**

1. The Authority shall resolve disputes and complaints between Operators, according to the Dispute Resolution Guidelines.
2. Notwithstanding the provisions of section 1, Operators shall endeavour to address any disputes relating to Public Radiocommunications Stations within the Annual Planning Process described in Schedule 1 and the Site Sharing Process described in Schedule 5.

### **Article 37. Rectification for non-compliance with this Regulation**

1. Operators will be responsible to rectify the status of their Public Radiocommunications Stations as directed by the Authority, in case such stations are found to be non-compliant with this Regulation, in accordance with the following procedures:
  - a. Providing assistance and all the required information to enable the Authority in cooperation with the Relevant Bodies to carry out their duties efficiently with the intent to survey all Public Radiocommunications Stations to determine those that are non-compliant.
  - b. Within a reasonable timeframe to be determined by the Authority in consultation with the Relevant Bodies, but in no case exceeding ninety (90) days, to carry out all modifications and corrective works in accordance with the rules, conditions, technical standards, and regulations applied by the Authority and the Relevant Bodies. In the event the Operator fails to do so, the Authority and the Relevant Bodies shall take the necessary legal measures and procedures.
  - c. In coordination with the Relevant Bodies, the Authority shall notify the concerned Operators in writing or by any other suitable means of violations together with any other details. The notification shall

include the procedures and actions an Operator shall perform to remove such violations.

2. The rectification of Legacy Stations will be subject to the procedures, principles and requirements set forth in Article 38.

### **Article 38. Rectification of Legacy Stations**

1. All Operators shall, in the timescales stipulated and in accordance with the relevant principles and processes set out in Schedules 11 to 14 of this Regulation, ensure that each of its Legacy Stations become permitted and/or certified as Public Radiocommunications Stations in accordance with the objectives of this Regulation and Decision No. (45) of 2015.
2. In accordance with the relevant requirements, principles and processes set out in Schedules 11 to 14 of this Regulation, Operators shall prepare and submit to the Authority Rectification Applications that allow the Authority to take such steps as are necessary to ensure that each of the Operator's Legacy Stations are, or shall be:
  - a. Maintained, managed and operated in accordance with the relevant provisions relating to public health and safety;
  - b. Maintained, managed and operated in order to limit unnecessary duplication of Radiocommunications Stations and to promote sharing;
  - c. Maintained, operated and managed with regard to the limiting of negative visual effects on the environment and surrounding Residents; and
  - d. Approved and/or certified by all Relevant Bodies and the Authority in a manner compliant with the objectives of this Regulation and Decision No. (45) of 2015.
3. The Authority shall review each Rectification Application and request additional information and/or clarification if it believes it is necessary to do so in accordance with the relevant requirements, principles and processes set out in Schedules 11 to 14 of this Regulation.
4. If, following its review of a Rectification Application, the Authority decides that further action is required by any Operator, the Authority will instruct the Operator to propose what remedial action it believes it could take in order to ensure that the Legacy Station in question complies with the terms of Schedules 11 to 14 of this Regulation and Decision No. (45) of 2015.
5. The Authority will liaise with all Relevant Bodies in relation to any requisite approvals and/or certificates (if applicable) that the Operator

will need to obtain in order to fulfil its obligations under sections 1 and 2 of this Article.

6. The Operator shall, in accordance with the relevant requirements, principles and processes set out in Schedules 11 to 14 of this Regulation, liaise with the Authority and file such additional applications as are necessary to allow the Authority to issue the Legacy Station with a Final Permit.
7. Once a Legacy Station has been rectified and/or has been assigned a Final Permit by the Authority, such station shall be subject to:
  - a. The Site Sharing Process set forth in Schedule 5 of this Regulation; and
  - b. The On-going Compliance Review Process set forth in Schedule 6 of this Regulation.
8. Should an Operator fail to comply with its obligations under this Article and/or the relevant requirements, principles and processes set out in Schedules 11 to 14 of this Regulation the Authority reserves the right to utilize the powers conferred upon it under Chapter VII of this Regulation.
9. An Operator may request the Authority, in exceptional circumstances, grant partial dispensation from certain requirements, principles and processes set out in Schedules 11 to 14 of this Regulation. The Operator must provide reasoned justification for its request to the satisfaction of the Authority. The Authority will consider the request and, if deemed justified, may by virtue of a decision, grant such dispensation. Where such dispensation is granted, the Authority will publish such decision including detailed justifications.

## **SCHEDULE 1 - ANNUAL SITE PLANNING PROCESS FOR PUBLIC RADIOCOMMUNICATIONS STATIONS**

### **Article 1. Scope and objectives**

1. This Schedule sets forth the Annual Site Planning Process that shall be conducted by the Authority in coordination with Operators and the Relevant Bodies to develop the Annual Deployment Plan.
2. The Annual Site Planning Process shall have the following specific objectives:
  - a. Increase coordination and interactions between the Authority, the Operators and the Relevant Bodies in the process of selecting Sites for the deployment of Public Radiocommunications Stations in order to achieve the goals set forth under Prime Ministerial Decision No. (45) of 2015;
  - b. Optimise the use of existing Public Radiocommunications Stations by promoting sharing, whenever sharing is the optimal solution pursuant to the provisions set forth under Prime Ministerial Decision No. (45) of 2015, this Regulation and all other related decisions issued by the Authority;
  - c. Keep the number of new deployments of Public Radiocommunications Stations to the minimum necessary to ensure the efficient operation of Radiocommunications networks and to meet Operators' legal obligations;
  - d. Limit the impact of Public Radiocommunications Stations on the surrounding environment, public scenery and interests of Residents in the locations such stations are to be constructed;
  - e. Implement a transparent and predictable consultation process with Operators and Relevant Bodies; and
  - f. Ensure that all Public Radiocommunications Stations are designed and installed in compliance with the provisions set forth under Decision No (45) of 2015, this Regulation and all other related decisions issued by the Authority and the Relevant Bodies.
3. The Annual Site Planning Process shall result in the publication by the Authority of an Annual Deployment Plan, which shall contain the proposed deployment of Public Radiocommunications Stations for a specified annual period by location, design type, height and sharing status.
4. In the transition period between the implementation of this Regulation and the start of the first Annual Deployment Plan, Operators may deploy

Public Radiocommunications Stations that are fully compliant with this Regulation but that have not been reviewed as part of an Annual Site Planning Process.

## **Article 2. Notification for initial Site planning meetings**

1. Annually, six months preceding the start of the period covered by the Annual Deployment Plan, the Authority shall issue a notification to Operators identifying a date and a place where the initial Site planning meetings will be held between the Authority and the Operators.
2. The notification referred to in section 1 shall also require each Operator to submit to the Authority within thirty (30) calendar days (or five months preceding the start of the period covered by the Annual Deployment Plan) an Annual Planning Package containing the following information:
  - a. A summary of Public Radiocommunications Stations deployments that have taken place during the previous twelve (12) months.
  - b. A forecast of deployments of Public Radiocommunications Stations for the twelve (12) month period starting five months after the submission date of such forecast, specifying for each Public Radiocommunications Station the following information:
    - i. Up to three proposed physical locations for the Public Radiocommunications Station;
    - ii. Design type of the Public Radiocommunications Station per physical location;
    - iii. Height of the Public Radiocommunications Station per physical location;
    - iv. Proposed sharing status of the Public Radiocommunications Station per physical location; and
    - v. A statement confirming that such Public Radiocommunications Station complies with the standards and requirements set forth in this Regulation.
  - c. An updated five-year high-level forecast of Public Radiocommunications Station deployments, including types and general areas of deployment. The general areas of deployment shall at least identify the Municipality and the district within the Municipality where the Operator expects to install the Public Radiocommunications Stations.
3. Operators shall submit the information described in section 2 in the manner specified by the Authority in the notification.

## **Article 3. Review of documentation submitted by Operators**

1. Within five (5) working days of receiving the Annual Planning Package from Operators, the Authority shall review the documentation submitted by each Operator.
2. If the Authority determines that the information submitted in the Annual Planning Package is incomplete, or that further clarification is required, the Authority shall direct the Operator to file supplemental information within five (5) working days. This direction may request additional information relating to:
  - a. Deployments that have taken place during the previous twelve (12) months;
  - b. Specific Public Radiocommunications Stations that the Operator plans to deploy during the period of the upcoming Annual Deployment Plan; and
  - c. The five-year forecast of Public Radiocommunications Stations deployments.
3. In the event the Operator does not provide a response within the time granted by the Authority under section 2, or if the Authority determines that the supplemental information is incomplete or does not provide the clarification required, the Authority shall:
  - a. If the supplemental information relates to a requirement under subsections 2(a) or 2(c), the Authority shall continue the Annual Site Planning Process and provide the Operator an additional five (5) working days to submit supplemental information. Failure to provide complete supplemental information will be deemed a breach of this Regulation and shall result in enforcement action by the Authority.
  - b. If the supplemental information relates to a requirement under subsection 2(b), the Authority shall exclude the Public Radiocommunications Stations in question from the Annual Site Planning Process and continue the preparation of the Draft Annual Deployment Plan as provided under Article 4 of this Schedule.
4. If the Authority determines that the information in the Annual Planning Package submitted by the Operator is complete, the Authority shall proceed with the preparation of the Draft Annual Deployment Plan as provided under Article 4 of this Schedule.

#### **Article 4. Draft Annual Deployment Plan**

1. Based on the information received from Operators under Articles 2 and 3 of this Schedule, the Authority shall:
  - a. Develop the Draft Annual Deployment Plan; and
  - b. Create a new file in the RIMS containing the proposed deployments of Public Radiocommunications Stations by Operator for the period of the upcoming Annual Deployment Plan.
2. To develop the Draft Annual Deployment Plan, the Authority shall review each Operator's proposed deployments to ascertain:
  - a. Compliance of the proposed Public Radiocommunications Stations with this Regulation;
  - b. Opportunities for consolidation through sharing at existing or proposed Public Radiocommunications Stations; and
  - c. Whether the Authority requires additional information to develop the Draft Annual Deployment Plan.
3. The Authority shall submit to Operators a Draft Annual Deployment Plan no later than four months preceding the start of the period covered by the Annual Deployment Plan.

#### **Article 5. Consultation with Operators**

1. The Authority and the Operators shall hold meetings to revise the Draft Annual Deployment Plan as needed seeking consensus among the parties.
2. Upon implementing all modifications, the Authority will produce a Revised Draft Annual Deployment Plan no later than three months preceding the start of the period covered by the Annual Deployment Plan.

#### **Article 6. Notification for the joint planning meeting**

1. No later than four months preceding the start of the period covered by the Annual Deployment Plan, the Authority shall issue a notification to Operators and Relevant Bodies identifying the expected date and a place for one or more joint planning meetings to be held between the Authority, the Operators and the Relevant Bodies.



## **Article 7. Review by Relevant Bodies**

1. No later than three (3) months preceding the start of the period covered by the Annual Deployment Plan, the Authority shall send the Revised Draft Annual Deployment Plan to the Relevant Bodies, which shall have one month from the date of delivery by the Authority to review such draft plan and submit comments to the Authority.
2. The Authority shall review any comments received from the Relevant Bodies and make any modifications it deems necessary to the Revised Draft Annual Deployment Plan.
3. No later than forty-five (45) calendar days preceding the start of the period covered by the Annual Deployment Plan, the Authority will send the Draft Final Annual Deployment Plan to the Relevant Bodies and Operators.

## **Article 8. Annual Deployment Plan**

1. No later than one (1) month preceding the start of the period covered by the Annual Deployment Plan, the Authority shall hold one or more joint planning meetings with Operators and Relevant Bodies to finalize the Draft Final Annual Deployment Plan.
2. The Authority shall address any issues raised during the joint planning meetings, making any modifications it deems necessary to the Draft Final Annual Deployment Plan.
3. The Authority will publish the Annual Deployment Plan at least one (1) week before its commencement date.

## **SCHEDULE 2 – APPLICATION PROCESS TO INSTALL NEW PUBLIC RADIOCOMMUNICATION STATIONS**

### **Article 1. Scope and objectives**

1. This Schedule sets forth the Full Permit Application Process to be conducted by the Authority, in coordination with the Relevant Bodies, to issue the requisite approvals to Operators to install new Public Radiocommunications Stations or modify existing Public Radiocommunications Stations in the Kingdom of Bahrain.
2. The Full Permit Application Process shall have the following specific objectives:
  - a. Establish an efficient single point of contact for the Permit Application Process to install new Public Radiocommunications Stations;
  - b. Ensure an effective and timely review process of such applications by the Relevant Bodies;
  - c. Provide a transparent process to elicit the views of Residents of the locations where such Public Radiocommunications Stations are to be constructed; and
  - d. Facilitate and streamline interactions between Operators and Relevant Bodies.
3. A chart summarizing the Full Permit Application Process is depicted in Figure 2-1 of this Schedule.

### **Article 2. Operators to submit applications via RIMS**

1. Operators shall submit all applications to install a new Public Radiocommunications Station or upgrade an existing one through the RIMS as directed by the Authority.
2. The Authority will not accept more than four applications per working day from any one Operator. Applications submitted in excess of this limit will be rolled forward as if submitted on subsequent working days and addressed on a first-in, first-out basis.
3. The Authority shall issue a reference number for each application on the day it is accepted for submission.

### **Article 3. Determination of completeness of application**

1. The Authority shall review each application for completeness within five (5) working days following its acceptance for submission.
2. If the Authority determines that the application submitted is incomplete, or that further clarification is required, the Authority shall direct the Operator to file supplemental information within five (5) working days.
3. The Authority shall have five (5) working days following the submission of supplemental information by the Operator to determine whether the revised application is complete. If the Authority determines the revised application is incomplete or requires further clarification, the Authority shall direct the Operator to file, within five (5) working days, additional supplemental information or clarifications. This process will be implemented as many times as necessary until the Authority is satisfied that the application is complete.
4. Once the Authority determines that the application is complete, the Authority shall:
  - a. In cases where expedited review is warranted, follow the Fast-track Permit Application Process established in Schedule 3 of this Regulation.
  - b. In cases where expedited review is not warranted:
    - i. Submit the appropriate requests via the RIMS to the Relevant Bodies for their review and follow the process described under Articles 4 and 5 of this Schedule; and
    - ii. Initiate a Public Engagement Process according to Schedule 4 of this Regulation.
  - c. Issue a notification to the Operator specifying the amount and manner of payment of applicable fees to the Authority and Relevant Bodies.

### **Article 4. Review of Application by the Authority and Relevant Bodies**

1. Relevant Bodies shall have twenty five (25) working days from the day the Authority submits the request set forth in Article 3(4)(b)(i) of this Schedule to review and issue a decision on whether to grant the applicable permit and/or certificate.
2. The Authority shall coordinate with the Relevant Bodies during the review process, assisting where necessary to ensure that process is completed within the twenty-five (25) working day period.

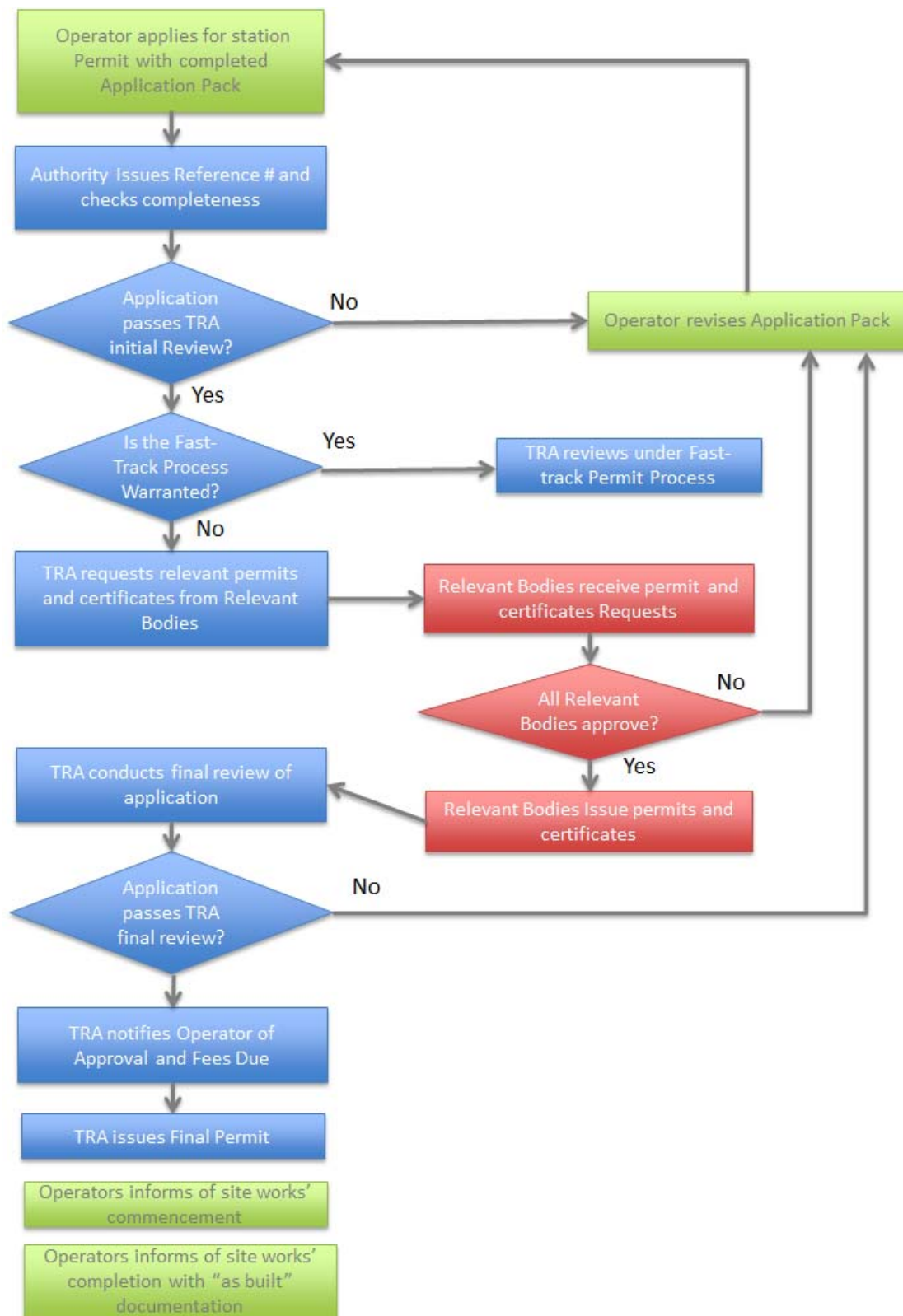
3. In the event a Municipality does not issue a decision on whether to grant or deny a requisite approval after twenty-five (25) working days, the Authority shall:
  - a. Within five (5) calendar days notify the Operator that the Municipality has not issued a decision on its application;
  - b. Inform the Operator that it may file a letter directly with the Municipality in question, communicating its intention to commence building of the Public Radiocommunications Station pursuant to Article 7 of the Building Law.
4. Any decision from a Relevant Body denying an application shall be reasoned and include proposed corrective measures enabling the Operator to remove the reasons for rejection. The Operator may refile a new application correcting the reasons for rejection.

#### **Article 5. Final Consideration and Approval by the Authority**

1. Once the Relevant Bodies issue the requisite Permits and/or No Objection Certificates or, in cases where the Operator has demonstrated to the Authority that it has validly concluded the process described in Article 7 of the Building Law, the Authority shall have ten (10) working days to review the application.
2. Provided that the Authority approves the application, the Authority shall:
  - a. Notify the Operator of the initial approval of the application; and
  - b. Update the application's status to reflect approval in the RIMS.
3. The Operator shall pay all applicable fees and provide proof of such payments to the Authority within ten (10) working days after receiving notification of the initial approval. Failure to demonstrate payment will void the application.
4. Within four (4) working days of the notification of the payment of all applicable fees, the Authority shall issue to the Operator a Final Permit including a hardcopy and an electronic copy through the RIMS.
5. Subsequent to issuing the Final Permit, the Operator shall inform the Authority the date works on the Public Radiocommunications Station have commenced. Such notification shall be made within five (5) working days of commencement of work.
6. Subsequent to completion of the Public Radiocommunications Station Site works, the Operator shall submit "as built" documentation for the station to the Authority demonstrating that the implementation of Site works have been carried according to the Detailed Design Drawings or, in instances of divergence from the Detailed Design Drawings, amended

drawings that demonstrate that the Site works are compliant with this Regulation.

**Figure 2-1: Chart of Permit Application Process**



## **SCHEDULE 3 – FAST-TRACK APPLICATION PROCESS**

### **Article 1. Scope and objectives**

1. This Schedule sets forth the Fast-track Application Process, which shall be conducted by the Authority in coordination with the Relevant Bodies to issue the permits and certificates required to:
  - a. Upgrade existing Public Radiocommunications Stations;
  - b. Authorise the deployment of Temporary Public Radiocommunications Stations; or
  - c. Authorise the deployment of Small Scale Stations.
2. For the purpose of this Regulation, an upgrade of an existing Public Radiocommunications Station shall occur if:
  - a. The Operator proposes to make any structural modification to such Public Radiocommunications Station;
  - b. The Operator proposes to install one or more additional Antennas or equipment on an existing Public Radiocommunications Station, either for the provision of its own services or for the sharing of such station with another Operator; or
  - c. The Operator proposes to make any modification to an existing Public Radiocommunications Station that may affect health and safety of the public.
  - d. The Operator proposes to make any modification to an existing Public Radiocommunications Station that will affect health and safety of the public or the visual impact of such station.
3. Routine maintenance of a Public Radiocommunications Station shall not be considered as an upgrade for the purpose of this Regulation.
4. The Fast-track Application Process shall seek to achieve the following specific objectives:
  - a. Simplify and expedite the Permit Application Process in the cases specifically identified in this Schedule;
  - b. Implement an efficient single point of contact for the Fast-track Application Process;
  - c. Ensure that service is available to Users during emergency situations and that Public Radiocommunications Stations used to that effect are duly approved; and

- d. Create incentives for Operators to deploy, where technically feasible, Small Scale Stations to limit the impact of Public Radiocommunications Stations on the surrounding environment, public scenery and Residents.

## **Article 2. Fast-track Application Process**

1. In cases where the Authority finds expedited review is warranted pursuant to Article 3(4)(a) of Schedule 2, the Authority shall notify the Relevant Bodies using a fast-track notification in the RIMS.
2. After the fast-track notification has been issued, the Relevant Bodies shall examine the application and issue a decision on whether to grant or deny the requisite approval within five (5) working days. If a Relevant Body does not issue a decision within this period, this shall be deemed equivalent to a grant of approval.
3. After receipt of approval from the Relevant Bodies, or if the Relevant Bodies take no decision, the Authority shall:
  - a. Notify the Operator of the approval of the application;
  - b. Issue a notification to the Operator specifying the amount and manner of payment of applicable fees to the Authority and Relevant Bodies; and
  - c. Update the application's status to reflect approval in the RIMS.
4. The Operator shall pay all applicable fees and provide proof of such payments to the Authority within five (5) working days after receiving notification of approval. Failure to demonstrate payment will void the application.
5. Within four (4) working days of the notification of the payment of all applicable fees, the Authority shall issue to the Operator a Final Permit including a hardcopy and an electronic copy through the RIMS.
6. After the Operator receives the Final Permit, the Operator may then proceed with:
  - a. The upgrade to the existing Public Radiocommunications Station;
  - b. Deploying a Temporary Public Radiocommunications Station; or
  - c. Deploying a Small Scale Station.

## **Article 3. Deployment of Temporary Public Radiocommunications Stations for emergency situations**



1. In the case of emergency situations in which existing service has been unexpectedly interrupted and can only be restored in the short-term by deployment of a Temporary Public Radiocommunications Station, the Operator shall:
  - a. Immediately take all actions necessary to deploy a Temporary Public Radiocommunications Station and commence operation of such station to ensure Users have access to the service;
  - b. Ensure that the Temporary Public Radiocommunications Station deployed does not affect health and safety of the public or air navigation;
  - c. File an application for approval of a Temporary Public Radiocommunications Station, within four (4) working days from the time work to deploy such Temporary Public Radiocommunications Station commences.
2. If upon review of the application the Authority determines that an emergency situation justifying the deployment of the Temporary Public Radiocommunications Station exists, the Authority shall follow the Fast-track Application Process to grant a Final Permit as established in Article 2 of this Schedule.
3. If upon review of the application the Authority determines that an emergency situation justifying the deployment of the Temporary Public Radiocommunications Station does not exist, the Authority:
  - a. Shall order the Operator to immediately cease operations and decommission the Temporary Public Radiocommunications Station in question within three (3) working days; and
  - b. May, at its sole discretion, seek the enforcement actions for non-compliance listed under Chapter VII of this Regulation.
4. For avoidance of doubt, Temporary Public Radiocommunications Stations may only be deployed in non-emergency situations if the relevant permit or certification has been obtained in advance of deployment.

## **SCHEDULE 4 – PUBLIC ENGAGEMENT PROCESS**

### **Article 1. Scope and objectives**

1. This Schedule sets forth the Public Engagement Process that shall be conducted to consult Residents prior to the installation of Public Radiocommunications Stations.
2. The Public Engagement Process shall not apply in the case of Public Radiocommunications Stations subject to the Fast-track Permitting Process described in Schedule 3.
3. The Public Engagement Process shall ensure that Residents of the areas where Public Radiocommunications Stations subject to this Schedule will be installed are:
  - a. Provided advance notification of the installation of proposed Public Radiocommunications Stations;
  - b. Given meaningful information on the exact location, design type, height and technical characteristics of proposed Public Radiocommunications Stations; and
  - c. Granted opportunity to provide valid comments regarding the installation of proposed Public Radiocommunications Stations.

### **Article 2. Initiation of Public Engagement Process**

1. Where the Authority determines that an application to install a new Public Radiocommunications Station is complete according to Article 3(1) of Schedule 2 and not subject to the Fast-track Permitting Process, the Authority shall initiate a Public Engagement Process by ordering the Operator to:
  - a. Post a notification on the planned Site selected for installation of the proposed Public Radiocommunications Station. This notification must be posted on an outer wall, be at least 2 feet x 2 feet in size, with font size at least  $\frac{3}{4}$  of an inch in height, and be visible from an adjacent road or public space; and
  - b. Provide the Authority an electronic version of the notification referred to in subsection 1(a) for the Authority to post on its website.
2. The physical notification shall be posted by the Operator and an electronic copy shall be provided to Authority within five (5) calendar days of receiving the order from the Authority and shall include the following information:
  - a. Design type;

- b. Height;
  - c. Footprint;
  - d. Energy sources to be used;
  - e. Accompanying Shelters or Buildings to be erected, if any;
  - f. Deadline for the public to submit valid comments or objections to the Authority, which shall be two weeks from the day the notification is posted;
  - g. Manner to present valid comments or objections to the Authority, which may be in writing through the Authority's website or via email or by telephone. The notification shall provide the electronic addresses and telephone numbers to be used for this purpose;
  - h. Reference number of the permit application for the Radiocommunications Station in question issued by the Authority; and
  - i. Such other information as the Authority may direct in its order issued pursuant to section 1.
3. The Operator shall demonstrate to the Authority that it has properly given notification to Residents in accordance with sections 1 and 2.
  4. If the Authority determines that the notification was not properly given, the Authority shall notify the Operator of the remedial actions required and grant the Operator five (5) calendar days to implement them. If the Operator fails to implement such remedial actions, or does not implement them to the satisfaction of the Authority, the application shall be deemed void and the review process terminated.
  5. If the Authority determines that notification was properly given in accordance with sections 1 and 2, the Authority shall continue the Public Engagement Process in accordance with Article 3 of this Schedule.

### **Article 3. Procedure to Assess Valid Comments and Objections**

1. Comments and objections received from the public before the deadline set forth in Article 2(2)(f) of this Schedule shall be reviewed by the Authority within two (2) weeks of being received to determine whether they are valid and justify action by the Operator.
2. A comment or objection will not be deemed valid if:

- a. It relates to aesthetic or visual concerns, and the proposed Public Radiocommunications Station is compliant with zoning and preferred design options for the specific area where it is to be constructed as set forth in the Schedule 8;
  - b. It relates to concerns associated with non-ionizing radiation and the Public Radiocommunications Station is compliant with the standards set forth in Resolution No. (4) of 2009 with respect to Regulating and monitoring Non-Ionizing Rays produced by Electromagnetic Fields;
  - c. It is deemed disrespectful, unintelligible, incomplete or contrary to the law; and
  - d. It relates to other concerns that the Authority determines from time to time that are not a valid cause for comment or objection.
3. Comments or objections that are not deemed valid will be addressed by the Authority, which shall give specific answers to the person or persons that presented the comment or objection. These comments or objections will not be forwarded by the Authority to the Operator for consideration.

#### **Article 4. Procedure to Address Valid Comments or Objections**

1. For valid comments or objections necessitating action from the Operator, the Authority shall coordinate with the Operator and relevant Municipality to address the concerns raised.
  - a. If the Authority determines that to resolve the comment or objection a solution can be found that does not substantively change the nature of the initial application, the Authority shall notify the Operator the remedial actions required. The Permit Application Process will be suspended until the Authority is satisfied that the Operator has fully implemented such remedial actions.
  - b. If the Authority determines that to resolve the comment or objection a solution cannot be found that does not substantively change the nature of the initial application, such application will be declared void and the Operator must file a new application implementing the remedial actions identified by the Authority.
2. Valid comments or objections shall be addressed by the Authority within four (4) weeks from the date of submission of a valid comment or objection. Within this timeframe, specific notification shall be given to the person or persons that presented the valid comment or objection on the assessment of such comment or objection and the remedial actions to be implemented by the Operator.

## **SCHEDULE 5 – SITE SHARING PROCESS**

### **Article 1. Scope and objectives**

1. This Schedule sets forth the Site Sharing Process for new and existing Public Radiocommunications Stations, which shall be conducted by the Authority in coordination with the Operators and the Relevant Bodies.
2. The Site Sharing Process has the following specific objectives:
  - a. Implement an efficient single point of contact for the Site Sharing Process;
  - b. Optimise the use of new and existing Public Radiocommunications Stations by promoting sharing, whenever sharing is the optimal solution, in accordance with Articles 17 to 19 and Schedules 1 and 2 of Decision No (45) of 2015;
  - c. Keep the number of new deployments of Public Radiocommunications Stations to the minimum necessary to ensure the efficient operation of Radiocommunications networks and meet Operators legal obligations;
  - d. Limit the impact of Public Radiocommunications Stations on the surrounding environment, public scenery and interests of Residents of the locations where such stations are to be constructed;
  - e. Implement a transparent and predictable application process with Operators and Relevant Bodies; and
  - f. Ensure that all Public Radiocommunications Stations are designed and installed in compliance with the provisions set forth under Decision No (45) of 2015, this Regulation and all other related decisions issued by the Authority and the Relevant Bodies.

### **Article 2. Quarterly Assessment of Site Sharing**

1. On the first working day of each quarter of the calendar year, each Operator shall submit a filing to the Authority and other Operators detailing the sharing opportunities on its Public Radiocommunications Stations. These sharing opportunities shall be deemed as an offer to share new and existing stations to every other Operator through the end of the quarter in question.
2. Operators shall submit their sharing opportunities using the RIMS.

3. The Authority shall evaluate the filings no later than six (6) working days after the first working day of the quarter to determine:
  - a. Whether the filing made by each Operator is consistent with the Annual Deployment Plan developed under Schedule 1 of this Regulation; and
  - b. Whether Operators have reviewed and, where relevant, indicated interest in sharing a new or existing Public Radiocommunications Station.
4. Where a filing has not been submitted or is not in compliance with this Article, the Authority shall:
  - a. Order the Operator to comply with this Article; and
  - b. At its sole discretion, seek the enforcement actions for non-compliance listed under Chapter VII of this Regulation.

### **Article 3. Monitoring of Site Sharing Negotiations and Relevant Application Process**

1. The Authority shall monitor the sharing process between Operators regarding new or existing Public Radiocommunications Stations in accordance with Schedules 1 and 2 of Decision No (45) of 2015.
2. Upon reaching agreement on the readiness for sharing of an existing Public Radiocommunications Station with the requesting Operator in accordance with Schedule 1 of Decision No (45) of 2015, the owning Operator shall utilize the Fast-track Permit Application Process described in Schedule 3 of this Regulation to obtain the relevant permits and/or certificates.
3. Upon successful negotiation of a sharing agreement for a new Public Radiocommunications Station in accordance with Schedule 2 of Decision No (45) of 2015, the initiating Operator shall utilize the Permit Application Process described in Schedule 2 of this Regulation to obtain the relevant permits and/or certificates.

## **SCHEDULE 6 – ON-GOING COMPLIANCE REVIEW PROCESS**

### **Article 1. Scope and objectives**

1. This Schedule sets forth the On-going Compliance Review Process concerning Public Radiocommunications Stations, which shall be conducted by the Authority in coordination with the Operators.
2. The On-going Compliance Review Process shall ensure that all Public Radiocommunications Stations comply with the provisions set forth under Decision No (45) of 2015, this Regulation, the Telecommunications Law, and all other related decisions issued by the Authority and the Relevant Bodies.
3. A chart summarizing the On-going Compliance Review Process is depicted in Figure 6-1 of this Schedule.

### **Article 2. Self-Accreditation Pack**

1. Operators shall submit an annual self-accreditation pack for each Public Radiocommunications Station as directed by the Authority within the following timeframe:
  - a. The initial self-accreditation pack for a Public Radio Communications Station shall be submitted between twelve (12) and twenty-four (24) months after obtaining the Final Permit for such station; and
  - b. Subsequent self-accreditation packs for a Public Radio Communications Station shall be submitted within twelve (12) months from date of submission of the previous self-accreditation pack for such station.
2. The self-accreditation pack shall demonstrate compliance of a the Public Radiocommunications Station, with the provisions set forth under Decision No (45) of 2015, this Regulation and all other related decisions issued by the Authority and the Relevant Bodies.
3. The requisite information to be submitted by Operators in the self-accreditation pack shall consist, at a minimum, of the following:
  - a. Site Location;
  - b. Statement of Compliance with ICNIRP radio frequency levels;
  - c. Statement of Compliance with Requirements for the Municipality's Building Permit or Road Occupation Permit, if applicable;
  - d. Statement of Compliance with Requirements for the Civil Aviation Authority's No Objection Certificate, if applicable;

- e. Statement of Compliance with Requirements for the Supreme Council for the Environment's No Objection Certificate, if applicable;
  - f. Statement of Compliance with Requirements for the Bahrain Defence Forces' No Objection Certificate, if applicable;
  - g. Statement of Compliance with Requirements for the General Directorate of Civil Defence's No Objection Certificate, if applicable;
  - h. Copy of Valid Electrical and Earthing Test Certificate;
  - i. Statement of Compliance with this Regulation; and
  - j. Current "As built" photos of the type in the original Permit Application.
4. Authority shall issue a reference number for each self-accreditation pack submitted by an Operator.

### **Article 3. Public Radiocommunications Stations Available for Audit**

1. Within five (5) working days from the submission of a self-accreditation pack, the Authority shall evaluate each pack to determine whether it is complete.
  - a. If the Authority determines that the self-accreditation pack is complete, the Authority will add the Public Radiocommunication Station associated with the pack to the RIMS database of Public Radiocommunication Stations available for compliance audit within the following twelve (12) months.
  - b. If the Authority determines the self-accreditation pack is incomplete or requires clarification, the Authority:
    - i. Shall direct the Operator to file a revised self-accreditation pack that is compliant with to Article 2 of this Schedule; and
    - ii. May, at its sole discretion, seek the enforcement actions for non-compliance listed under Chapter VII of this Regulation.

### **Article 4. Internal Plan for Annual Compliance Audit**

1. Before August 31 of each year, the Authority shall complete an internal plan to audit a sample of Public Radiocommunications Stations of each Operator for compliance with the provisions set forth under Decision No



(45) of 2015, this Regulation and all other related decisions issued by the Authority and the Relevant Bodies.

2. The compliance audit shall, at a minimum, verify that each Public Radiocommunications Station meets the requirements of Chapters IV and V of this Regulation.

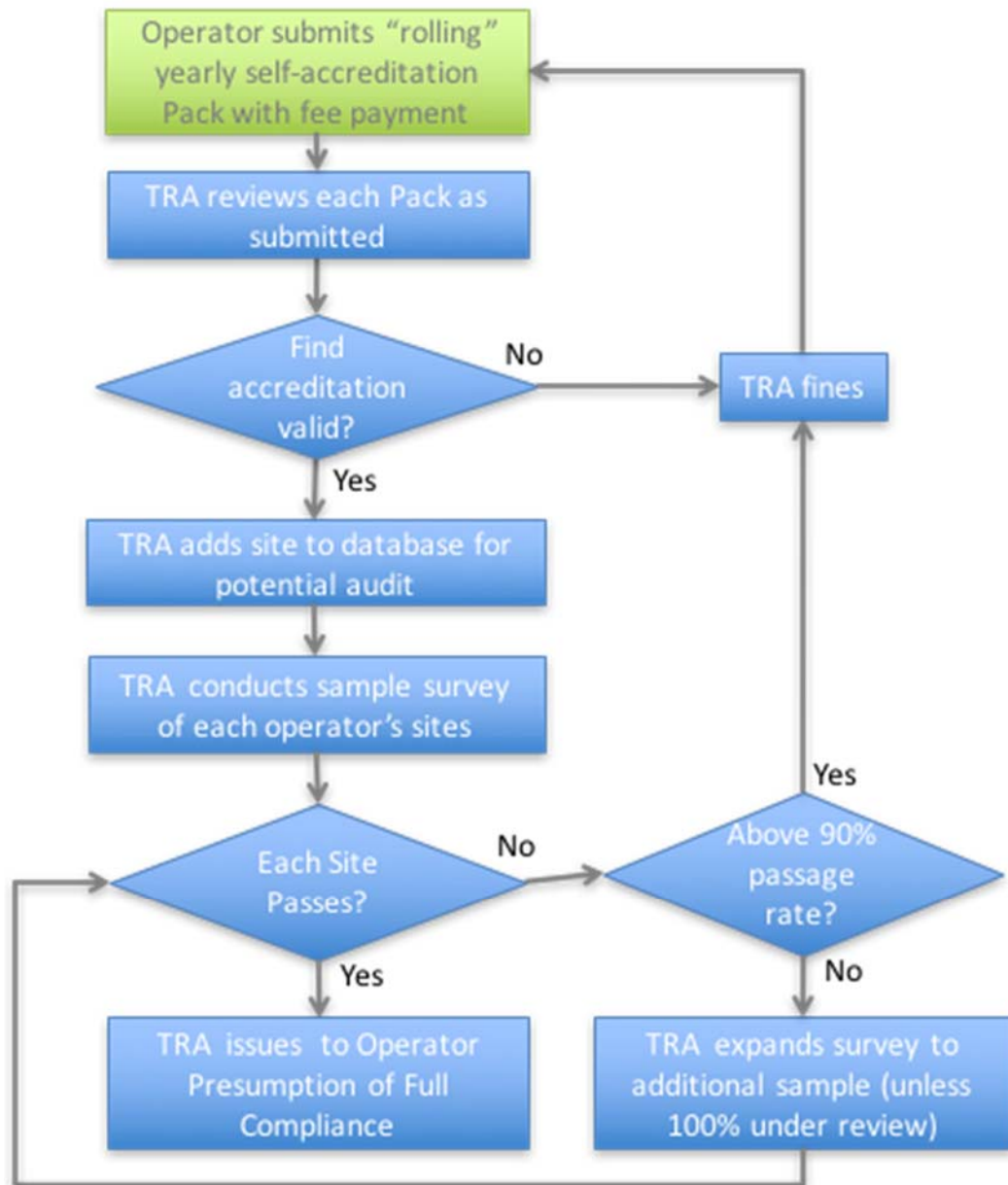
#### **Article 5. Annual Compliance Audit**

1. The Authority or a third party on behalf of the Authority shall conduct a sample compliance audit of each Operator's Public Radiocommunications Stations, issuing a decision whether each station audited passed or failed the compliance audit.
2. For each Public Radiocommunications Station that fails the audit, the Authority:
  - a. Shall direct the Operator to initiate remedial actions within a specified timeframe to bring the station in question into compliance; and
  - b. May, at its sole discretion, seek the enforcement actions for non-compliance listed under Chapter VII of this Regulation
3. Should less than ninety (90) percent of the audited Public Radiocommunications Stations of an Operator pass the compliance audit, the Authority shall:
  - a. Expand the compliance audit to encompass an additional percentage of the Operator's Public Radiocommunications Stations, as many times as is needed, until:
    - i. ninety (90) percent of an Operator's audited Public Radiocommunications Stations pass the compliance audit; or
    - ii. one hundred (100) percent of an Operator's Public Radiocommunications Stations are audited.
  - b. The Authority shall determine the timeframe to conduct the expanded audits as needed.
4. When ninety (90) percent of an Operator's audited Public Radiocommunications Stations pass the compliance audit, whether through the initial compliance audit or the implementation of required remedial actions, the Authority shall issue a Presumption of Full Compliance Certificate to the Operator.

#### **Article 6. Applicable Fees**

1. Operators shall pay an annual fee associated with the On-going Compliance Review Process described in this Schedule.
2. The specific fee referred to in section 1 are set forth in Schedule 9 and shall be paid by the Operator at the time of submission of the self-accreditation pack described in Article 2 of this Schedule.

Figure 6-1. Chart of On-going Compliance Review Process



## SCHEDULE 7 – PERMITTING AND CERTIFICATION REQUIREMENTS BASED ON SUPPORT STRUCTURE

### Article 1. Permitting and Certification Requirements Based on Support Structure

- The following table summarizes the permits and/or certificates that each Relevant Body must issue for the various types of Public Radiocommunications Stations deployed by Operators in the Kingdom of Bahrain based on their support structure:

	<b>Guyed Mast</b>	<b>Lattice Mast</b>	<b>Monopole</b>	<b>Rooftop Mast</b>	<b>Stub Mast</b>
<b>Authority</b>	Final Permit	Final Permit	Final Permit	Final Permit	Final Permit
<b>Municipality</b>	Building Permit	Building Permit	Building Permit	Building Permit	Building Permit
<b>CAA</b>	NOC	NOC	NOC	NOC	N/A
<b>BDF</b>	NOC	NOC	NOC	NOC	N/A
<b>GDCD</b>	NOC	NOC	NOC	NOC	NOC
<b>SCE</b>	NOC	NOC	NOC	NOC	NOC

	<b>Wall Mount</b>	<b>Temporary Station</b>	<b>Streetworks and Outside Small-scale (on Building facades)</b>	<b>Small-scale (inside buildings)</b>
<b>Authority</b>	Final Permit	Final Permit	Final Permit	Final Permit
<b>Municipality</b>	Building Permit	ROP, if in public road; N/A otherwise	ROP for Streetworks in public road; N/A otherwise	N/A
<b>CAA</b>	N/A	NOC	N/A	N/A
<b>BDF</b>	N/A	N/A	N/A	N/A
<b>GDCD</b>	NOC	N/A	N/A	N/A
<b>SCE</b>	NOC	NOC	NOC	N/A

NOC= No Objection Certificate

N/A = Not applicable, meaning that no permit or certificate applies

ROP= Road Occupation Permit

## SCHEDULE 8 – PREFERRED PUBLIC RADIOCOMMUNICATIONS STATION DESIGN OPTIONS

### Article 1. Preferred Design Options

1. The following table summarizes the preferred Public Radiocommunications Stations design options by zone.
2. The Authority shall publish a map identifying the various zones described in the table below to assist Operators in the process of designing and applying for relevant permits and certificates for Public Radiocommunications Stations. This map shall be made available through the RIMS.

Zone	Type of Station					
	Camouflaged or Stealth Solution	Wall Mounts/ Stub Mast	Small Scale Station / Streetworks	Monopole	Rooftop Mast	Lattice or Guyed Mast
Places of Interest	Allowed	Allowed	Allowed	Not Allowed	Not Allowed	Not Allowed
<200m from Major Roads	Allowed	Allowed	Allowed	Not Allowed	Not Allowed	Not Allowed
Residential/Housing Areas	Allowed	Allowed	Allowed	Allowed	Not Allowed	Not Allowed
Commercial Districts	Allowed	Allowed	Allowed	Not Allowed	Not Allowed	Not Allowed
Industrial/Factory Areas	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Rural Locations/Low Populated Area	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed

Note: "<200m from Major Road" means less than 200 meters from the center of a Major Road

### Article 2. Additional conditions on preferred design options

1. The Authority shall follow the additional conditions described in this Article to assess proposed designs unless the Operator provides compelling evidence that alternative design options are best suited for a particular Public Radiocommunications Station based on health and safety, financial, aesthetic or other considerations:
  - a. For Camouflage or Stealth Solutions, the Authority shall prefer that such solution be appropriate for the context of its surroundings.
  - b. For Monopoles, Lattice Masts, Guyed Masts and Rooftop Masts, subject to the provisions of Article 18(e) of Decision No. (45) of 2015, the Authority shall prefer a deployment outside of a 200 meter radius of an existing Mast.

- c. Among Monopoles, Lattice Masts and Guyed Masts, the Authority shall prefer Monopoles over Lattice Masts and Guyed Masts.
- d. For Monopoles, Lattice Masts and Guyed Masts, the Authority shall prefer deployment of Public Radiocommunications Stations where:
  - i. Existing topography, vegetation, Buildings or other structures screen the Mast such that the visibility from the Viewshed is minimal;
  - ii. Masts with low profile Antenna arrays will blend with street furniture or common utility structures;
  - iii. Deployment is out of public view; and
  - iv. The height of the Mast is less than 30 meters from its base.
- e. For Rooftop Masts, the Authority shall prefer that, when such a Mast extends above the roof height of a Building on which it is mounted, every effort shall be made to conceal or camouflage the facility within or behind existing or new architectural features to limit its visibility from public ways. Rooftop Masts shall be stepped back from the front façade of the Building in order to limit their impact on the Building's silhouette.
- f. For Wall Mounts, the Authority shall prefer such Public Radiocommunications Stations that blend with the existing Building's architecture and where the panels shall be painted or shielded with material consistent with the design features and materials of the Building.
- g. For Stub Masts, the Authority shall prefer that the height of such structures not exceed 3 meters measured from the rooftop and that such Masts stepped back from the front façade of the Building in order to limit their impact on the Building's silhouette.
- h. Small Scale Stations and Streetworks shall be the Authority's preferred design option whenever viable.
- i. With respect to Shelters, the Authority shall prefer Shelters designed in accordance with one of the following design standards:
  - i. Shelters shall be located in underground vaults; or
  - ii. Shelters shall be designed so that they are architecturally consistent, with respect to materials and appearance, with the Buildings in the area surrounding the Public Radiocommunications Station; or
  - iii. Shelters shall be camouflaged behind an effective year-round landscape buffer, equal to the height of the proposed Shelter, and/or a fence of an opaque material, if other types of camouflage are not feasible; or.

- iv. If installed on a rooftop, the Shelter shall be concealed or camouflaged so that the Shelter either is not visible at grade or appears to be a part of the original structure.
- j. With regard to associated cabling, the Authority shall prefer that the cables must be routed internally within the existing Building unless the Building construction does not allow internal routing of the cables. In the case that the cabling cannot be routed internally within the existing Building, the cable tray must be concealed or integrated to the extent feasible.

**SCHEDULE 9 – APPLICABLE FEES**

**Article 1. Fees for issuance of the Final Permit for installation of Public Radiocommunications Stations**

1. Operators shall pay to the Authority the following fees for the review of applications and issuance of the Final Permit for the installation of each Public Radiocommunications Station:

<b>Fee (BD)</b>	<b>Lattice Mast</b>	<b>Guyed Mast</b>	<b>Monopole</b>	<b>Rooftop Mast</b>	<b>Stub Mast</b>
Public Radiocommunications Station Permit Fee	100	100	100	100	25

<b>Fee (BD)</b>	<b>Wall Mount</b>	<b>COWs</b>	<b>Streetworks</b>	<b>Small-scale</b>
Public Radiocommunications Station Permit Fee	25	50	25	25

2. In cases where two or more Operators share a new Public Radiocommunications Station, the initiating Operator shall be responsible for the payment of the fee set forth under section 1 and may recover part of such fee from the sharing Operator in proportion to its use of such station.

**Article 2. Fees for issuance of the Final Permit for upgrading of Public Radiocommunications Stations**

1. Operators shall pay to the Authority the following fees for the review of applications and issuance of the Final Permit for the upgrade of each existing Public Radiocommunications Station:

<b>Type of upgrade or modification</b>	<b>Fee (BD)</b>
Sharing of an existing Public Station Radiocommunications Station	25
Installation of additional Antennas or equipment	25
Structural modifications Public Station Radiocommunications Station	25
Modification to Public Radiocommunications Station that may affect health and safety of the public or the visual impact of such station	25
Modification to Public Radiocommunications Station that will affect the visual impact of such station	25

2. In cases of sharing of existing Public Radiocommunications Stations, the requesting Operator shall be required to pay the fee set forth under section 1.

**Article 3. Fees for Annual Compliance Audits**



1. Operators shall pay to the Authority the following fees per Public Radiocommunications Station for the performance of Annual Compliance Audits as described in Schedule 6:

	<b>Lattice Mast</b>	<b>Guyed Mast</b>	<b>Monopole</b>	<b>Rooftop Mast</b>	<b>Stub Mast</b>
Public Radiocommunications Station Annual Compliance Fee	425 BD (where Mast is not compliant with Zoning Table in Article 1 of Schedule 8); 50 BD (where compliant)	425 BD (where Mast is not compliant with Zoning Table in Article 1 of Schedule 8); 50 BD (where compliant)	425 BD (where Mast is not compliant with Zoning Table in Article 1 of Schedule 8); 50 BD (where compliant)	425 BD (where Mast is not compliant with Zoning Table in Article 1 of Schedule 8); 50 BD (where compliant)	10 BD

	<b>Wall Mount</b>	<b>COWs</b>	<b>Streetworks</b>	<b>Small-scale</b>
Public Radiocommunications Station Annual Compliance Fee	10 BD	50 BD (per week or fraction of week deployed)	10 BD	10 BD

2. In cases where two or more Operators share a Public Radiocommunications Station, the owning Operator shall be responsible for the payment of the fee set forth under section 1 and may recover part of such fee from the sharing Operator in proportion to its use of such station.

## **SCHEDULE 10 – ADDITIONAL TECHNICAL REQUIREMENTS**

### **Article 1. Scope and Application**

1. This Schedule shall apply to all new and existing Public Radiocommunications Stations. Operators are required to bring Legacy Stations into full compliance with the provisions of this Regulation, before or within the period specified by the Authority in accordance with Schedule 13 of this Regulation. However, irrespective of the timelines set out in Schedule 13, Operators shall take immediate remedial action in respect of any Public Radiocommunications Station which poses security, health, safety or environmental hazards.
2. This Schedule does not apply to Public Radiocommunications Stations:
  - a. Used for (i) military, (ii) national security, (iii) emergency and (iv) medical purposes; and
  - b. Used for Broadcasting services.

### **Article 2. Structural Loading Requirements**

1. The designs of Public Radiocommunications Stations must be fully compliant with all relevant and most up to date versions of applicable international standards as identified in Article 21 of this Regulation, the Standard Specifications for Construction Works and any other applicable legislation and regulation.
2. Any proposed Mast shall be designed structurally, electrically, and in all other respects, to accommodate both the owning or lead Operator's Antennas and comparable Antennas for at least two additional Operators if the structure is over 30 m in height, or for at least one additional Operator if the structure is 18 m to 30 m in height.
3. Any proposed Mast must be designed to allow for the future rearrangement of Antennas upon the Mast and to accept Antennas mounted at varying heights. Operators are required to allow additional Antennas owned and/or operated by other Operators on their Masts.
4. Operators must carry out a specific design assessment for the selection of the type of Mast and requirement for foundations for the Mast to be installed on Site. Where equipment is to be added to an existing Mast or support structure, and such additions may increase structural loading, a specific structural design assessment related to the additional loads must be carried out as part of the design works.
5. Any base of a structure that is at a height that warrants edge protection shall have safety barriers, handrails or other suitable forms of fall protection in place. The base of the structure must be of sufficient strength and be suitable for such edge protection.

6. Due allowance is to be taken of all wind, static, dynamic and live loading conditions. The design must make due allowance for the access, durability, service continuity, operating life and the operation and maintenance requirements of the Public Radiocommunications Station.
7. All architectural and structural designs shall be certified by an engineering firm accredited by the COEPP in accordance with Article 11(4) of this Regulation.

### **Article 3. Equipment Requirements**

1. In the deployment of a Public Radiocommunications Station, the Operator shall use the most up to date and relevant manufacturer's equipment specifications in the preparation of the design, taking due notice of physical properties, handling guidelines and the operation and maintenance requirements of the equipment.

### **Article 4. Greenfield Site Investigation and Initial Technical Survey**

1. Greenfield Sites require that a geotechnical investigation be undertaken by a competent contractor. This investigation should include the following requirements:
  - a. Bore hole log;
  - b. Soil tests;
  - c. Results noting in particular the soil bearing pressure at appropriate intervals that exceed planned foundation formation level;
  - d. Conclusions;
  - e. Recommendations; and
  - f. Plan drawing of Site with location of bore holes clearly marked.
2. A complete building survey of the construction area will be undertaken along with a risk assessment for all third party Sites. This will establish the on-site risks, hazards and working criteria for the design.

### **Article 5. Additional Guidance Specific to Rooftop Sites**

1. To minimize the requirement for working at height for the installation, upgrading and maintenance of Rooftop Sites, the following should be taken into consideration:
  - a. The maintenance-free life of equipment and ancillary equipment should be as long as possible;
  - b. Antennas shall be located where access is possible at roof level with no exposed edges allowing pedestrian safe access, rather than the face of

the Building where mobile elevating work platform access or abseiling may be the only means of access; and

- c. Remote electrical tilt units should be used to allow Antennas to be remotely, rather than mechanically, tilted.
2. The hazards associated with operational and maintenance work required on Rooftop Sites must be identified and risk assessed. If the risks cannot be eliminated the control measures to minimize the risk must be recorded. During operational and maintenance work the possibility of fire must also be considered.
3. Roof surface penetration should be avoided where possible. Any roof surface penetration is to be immediately made good to avoid any risk of water ingress.

## **Article 6. Quality of Material used in Site Construction**

### 1. General quality of materials

- a. Building construction material and methods shall be in accordance to the Standard Specifications for Construction Works.
- b. All building materials must be fit for purpose and also suitable to the environmental conditions in which they are to be used.
- c. Building materials must be handled, stored, prepared, used and installed in accordance with the manufacturer's current written recommendations. The general quality of workmanship shall meet, at a minimum, the requirements set out in the most current version of BS 8000 Workmanship on Building Sites.

### 2. Weight of materials

- a. The weight of materials shall be limited to the amount that the roofing material and structural supports can safely carry. Materials shall not be placed, on either a temporary or permanent basis, in a location that cannot support them.
- b. The materials and permanent loads shall not be placed directly on roofing in a manner that through punching or tearing that risks leading to water ingress.
- c. Heavy loads shall be centered over structurally suitable load bearing walls, concrete lift housing and stairwells, structural columns and structural beams.
- d. Structural beams must be checked for structural load capacity and for deflection limits, appropriate to the Building's functions, to ensure that sagging does not lead to damage to the roofing material, ceiling and services in spaces below.

### 3. Working on existing and third party property

- a. The Operator and associated contractors shall plan and execute the works in such a manner as to cause the minimum of disruption and/or damage to existing and third party property. All existing Buildings are to be maintained as weather tight and waterproof throughout the period of construction and during operational and maintenance life.
- b. The contractor shall document the build process with photographs. Any damage caused to the existing features during the works shall be immediately recorded by clear photographs and provided to the construction engineer.
- c. All damage shall be made good to the Site provider's satisfaction prior to the responsible contractor leaving the Site, where reasonably practicable, in the same or similar conditions as before the build process commenced.

### **Article 7. Lighting**

1. No lighting of the structure, either from ground-mounted or mounting on the structure itself, shall be allowed unless required by the Civil Aviation Affairs or the Authority.
2. If required, structure-mounted lighting shall be limited to red flashing lights from sunset to sunrise. White strobe or other similar lighting may be allowed from sunrise to sunset.
3. Lighting of accessory structures and the Site may be permitted if it is of low intensity, directed inward and downward and is limited to within the Site boundary. □
4. Appropriate lighting must be fitted to all Buildings where persons are to carry out work and on the approaches to such Buildings to ensure that there is sufficient artificial light present to allow them to carry out their work in safety. Emergency lighting must be installed and certified to the requirements of General Directorate of Civil Defence and I.S. 3217: Emergency Lighting.
5. When incorporated into the approved design of the Mast, light fixtures used to illuminate sports fields, parking lots, or similar areas must be attached to the Mast. Such lighting shall be designed and arranged so that it does not glare onto adjacent property or roadways. □
6. Aircraft warning lights shall be installed in accordance with relevant guidance from the Civil Aviation Authority.

### **Article 8. Signage**

1. Suitable warning signs shall be installed using standard safety pictograms, words and colours addressing the following:
  - a. Electrical hazards;
  - b. Access routes;
  - c. The requirement to wear safety harness, wherever fall arrest, work restraint systems are necessary;
  - d. Trip hazards / unprotected edges; and
  - e. Radio frequency hazards.
2. As a minimum requirement for Sites, suitable warning signage shall be installed at the following locations:
  - a. Final access onto a roof at eye level;
  - b. Prominently on any physical barrier installed to prevent access into a non-compliance area;
  - c. Adjacent to an Antenna at eye level; and
  - d. For non-ionising radiation warning signs, at the point(s) of controlled access and on the Antennas themselves as an added precaution.
3. If there are known underground cables they shall be shown on the record drawings of the Site.
4. The following additional warning signs shall be utilised in connection with the Mast or Site, as applicable: 
  - a. If high voltage is necessary for the operation of the Mast or any backhaul network or associated equipment, “HIGH VOLTAGE — DANGER” warning signs shall be permanently attached to the fence or wall surrounding the structure and spaced no more than 6 meters apart; and
  - b. “NO TRESPASSING” warning signs (i) shall be permanently attached to the fence or wall surrounding the structure and spaced no more than 12 meters; (ii) shall be written with the height of the lettering at least 0.3 meters and installed at least 1.5 meters above the finished grade; and (iii) may be attached to free standing poles if the content of the sign may otherwise be obstructed by landscaping.
5. The Site shall contain a sign of dimensions 40 cm x 40 cm in order to provide adequate notification to persons in the immediate area of the presence of an Antenna that has transmission capabilities and shall contain the name(s) of the owner(s) and Operator(s) of the Antenna(s) as well as emergency phone number(s). The sign shall be on the Shelter of the Operator and be visible from

the access point to the Site and must identify the equipment owner of the Shelter. For Public Radiocommunications Stations that do not have a Shelter, the sign must be on a readily visible surface.

## **Article 9. Equipment Accommodation**

### **1. General**

- a. Equipment accommodation must be designed in compliance with, at a minimum, all sections of this Schedule and other applicable safety, health and welfare-at-work laws and regulations. All equipment accommodation shall be fit-for- purpose and shall be constructed from materials appropriate to the environment.
- b. All structural designs must comply with the most up to date Eurocodes, I.S.EN 1990-1999, Standard Specifications for Construction Works, Bahraini environmental, health and safety legislation and guidelines and other applicable rules and codes.
- c. Equipment shall be accommodated in the safest, most efficient and economical manner on a Site-specific basis.
- d. Equipment accommodation shall follow Detailed Design Drawings that demonstrate sufficient space is available.
- e. With regards to equipment rooms, the walls, floor, and ceiling shall have a fire resistance suitable for the Building or environment in which it is built and in accordance with GDCD requirements.
- f. The design of the equipment accommodation must ensure that the noise levels emitted from the Shelter, including air conditioning, do not exceed the limits defined by relevant standards and legislation. Noise levels for air conditioning units shall be determined from manufacturer's product information.
- g. The design of the equipment accommodation must minimize the transmission of vibrations to surrounding premises.
- h. Equipment accommodation comes in two types:
  - i. Outdoor Shelter; and
  - ii. In-premise room.

### **2. Outdoor Shelters**

- a. All outdoor Shelters and structure accessories accommodating equipment shall be architecturally designed to blend in with the surrounding environment and shall meet the minimum setback requirements of the relevant zoning district.

- b. Ground-mounted equipment shall be screened from view by suitable vegetation, except where a design of non-vegetative screening better reflects and compliments the architectural character of the surrounding neighbourhood.
- c. The Shelter shall contain one or more carbon dioxide extinguishers in accordance with GDCD requirements.
- d. The Shelter fabric shall be designed to be:
  - i. Watertight;
  - ii. Weather resistant;
  - iii. Temperature and fire controlled;
  - iv. Acoustically insulated against sound from the equipment;
  - v. Protected against solar gain;
  - vi. Secure from unauthorized access; and
  - vii. Structurally suitable to withstand loads from internal fixings and supporting equipment.
- e. Where possible, the outdoor Shelter shall be located at ground level on a standard concrete base in order to allow safe ease of access for personnel.
- f. Where it is necessary to locate outdoor Shelters at roof level:
  - i. A structural support frame shall be used to transfer the loads onto the structural elements of the Building;
  - ii. Anchor bolts are to be used to secure the units to the base;
  - iii. The base onto which the units are to sit must be level +/- 2.5mm over 1600mm span, true to the horizontal plane;
  - iv. When two or more plinths are mounted adjacent to each other the top face of the plinths must be levelled within +/- 0.5mm of each other to a true horizontal plane; and
  - v. Roof repair work and new works shall be compatible with existing roofing systems and products.

### 3. In-premises rooms



- a. In-premise rooms shall be designed taking into account all relevant Building regulations and national codes of practice.
- b. The walls, floors and ceilings shall have a fire resistance suitable for the Building type in which the in-premises room is located.
- c. The in-premise room shall be resistant to external environmental conditions, such as moisture and temperature variations, that may affect the operation of the enclosed equipment.
- d. The in-premises room shall be designed so as to prevent any unauthorized access to the equipment.
- e. The equipment must be fixed in position within the in-premise room as specified on the equipment layout drawing of the Detail Design Drawings.
- f. The equipment must be bolted to the ground using an anchor suitable to the floor type. The units must also be bolted to the rear wall as required by manufacturer's unit installation specifications.
- g. Doors shall be, at a minimum, single wooden doors with a certified fire resistance that is suitable for the Building type that houses the room. The door is to be stamped or labelled with the fire rating. Doors shall be selected to provide a minimum clear door opening of 800mm, and a minimum clear door height of 1970mm.
- h. Equipment room doors shall be equipped with internal and external handles and a restraint arm to avoid the door closing accidentally.
- i. The floor finish shall be 2mm thick PVC sheet flooring secured to a suitable surface with adhesive and finished to a horizontal surface with a tolerance of 6mm in 3000mm in a straight line in any direction. The flooring system shall incorporate edge trims and skirting. Floor coverings shall have appropriate anti-static properties, of a neutral colour and of non-slip qualities.
- j. The walls and ceiling shall be covered or painted to create a clean, dust free, environment. The walls and ceiling must be structurally suitable to support the wall and ceiling mounted equipment and fittings and their associated fixings.
- k. In situations where independent ceilings are required to enclose the room, a metal stud support frame shall be used. A 12.5mm fire line wall board is to be installed to the underside of the frame with all joints taped and sealed with two coats of white emulsion paint.

#### 4. Electrical Services

- a. Operator Sites, at a minimum, require that all electrical installations are designed and installed in accordance with Electricity & Water Authority (EWA) standards. In addition, all electrical installations should reflect the following:
  - i. All Operators' meter cabinets shall be clearly labelled on the inside of the door;
  - ii. The Operator's electrical enclosures shall be in proper working order (i.e. not damaged); and
  - iii. All electrical enclosures shall be securely closed and free of any visible damage.
- b. The power supplies to the installed equipment shall be provided through on-load local isolating switches or switched fuse connection units. The installation of all electrical services shall include cabling, trunking, cable marking, etc. The Operator must ensure all electrical wiring is in compliance with applicable standards in the Kingdom of Bahrain.
- c. An indoor air conditioning (AC) cabinet shall be provided to enclose the distribution board. The cabinet shall be mounted at a maximum height of 1400mm (to the underside of the cabinet) above finished floor level and should be fitted with a schedule installed inside a protection cover, specifying the use of each circuit breaker. An external generator socket will be outside the door.
- d. One twin 1200mm fluorescent light fitting must be provided at maximum for every 3 x 2m area. Emergency lighting shall be provided by a combined luminary/non-maintained luminary.
- e. The normal lighting shall be controlled from a light switch located on the inside of the equipment housing by the door. Wiring to the fittings shall be carried out using PVC (1.5mm<sup>2</sup>) type cable as a minimum, with 6A miniature circuit breaker protection.
- f. External lighting shall be provided over doors, and shall preferably switch itself on using a proximity circuit.
- g. Socket outlets shall be located as shown on the Detail Design Drawings, beside a drop down table. Wiring to the socket outlets shall be carried out using PVC (2.5mm<sup>2</sup>) type cable as a minimum in the perimeter trunking, with 6A miniature circuit breaker protection, dropping to the outlet positions in PVC conduit.
- h. The internal room shall be equipped with an external alarm, which will be wired to an external alarm box located on the Detail Design Drawings.
- i. An indoor earthing bar shall be provided and installed adjacent to an indoor electrical cabinet. This shall be the general terminal to which all

metalwork and equipment inside the equipment housing shall be bonded. Sites require a 23-way master earth bar for the electrical supply at the distribution box and for the dedicated earth for all equipment installed.

- j. The AC power supply shall be derived from a dedicated metered supply or from the distribution network within the existing Building's supply.
- k. The source of the mains feed is to be clearly identified on the Detailed Design Drawings and As Built Drawings. The source of the mains feed is to be labelled inside the cabin/ room build with details of floor, room, and panel.
- l. An AC power supply cable shall be routed from the above meter position/cabinet and terminate into the indoor electrical cabinet located within the equipment room.
- m. Where the power cable may be exposed to damage the cable tray shall be covered. The power cable must enter the equipment room at a different location different from the feeder cables, i.e., a separate power cable entry point should be provided.
- n. It is preferred that the power cable shall enter the room directly below the position of the AC cabinet.

## 5. Air Conditioning

- a. All equipment rooms will have cooling units installed. The design of the equipment housing shall maintain an operational temperature of +20°C to +37°C. The ambient room temperature is to be set to 30° C.
- b. Cooling units shall be provided with a high temperature alarm set to 38°C, connected to a krone block. Ventilation units should not encroach on the internal clear dims of the enclosure. The system must be securely wall mounted externally and capable of nominal cooling capacity of up to 12KW.

## 6. Co-Axial Cable Management

- a. Where feeder cables have to be carried across a flat roof, a route should be determined which provides the most direct route between the Antenna location and the equipment room that will carry the cables within the specified bending radius.
- b. The choice of route shall take into account Site safety and follow a design that locates cable runs a safe working distance from exposed roof edges, avoids trip hazards, fragile roof space, roof light and other on-site hazards where reasonably practicable.

- c. The existing roof weathering membrane must be taken into account in the design of the method of attaching the system to the flat roof. Whilst the installation of the tray is being carried out, particular attention must be paid to the roof at all times so as to ensure that no penetrations are made that may lead to water ingress into the Building.
- d. General requirements for horizontal cable runs include:
  - i. The runs are to be supported with a heavy duty return flange hot-dip galvanized perforated cable tray.
  - ii. Screw fixed to concrete paving slabs with the use of galvanized hangers on polystyrene blocks at 2 meter centers.
  - iii. The width of the cable tray shall be appropriate to the number and size of cables required and their arrangement on the tray.
  - iv. Reducers shall be used when a change in tray width is necessary.
  - v. Where a cable tray runs have to cross rooftop walkways, the tray shall be covered with heavy duty cover and painted black and amber to distinguish hazard.
  - vi. Where cable trays need to be cut, all sharp edges are to be removed or protected in order to avoid any health and safety risks and damage to feeder cables. When a tray needs to be cut, two coats of galvanized paint should be applied immediately on cutting.
- e. Where cables are carried across walls, either internally or externally,
  - i. a cable tray must be used and fixed to the wall at 600mm centers with the use of galvanized bracket / hangers screws fixed to wall.
  - ii. The width of the cable tray shall be appropriate to the number and size of cables required and their arrangement on the tray.
  - iii. If the cable tray requires a cover to be fitted, the cables must be tie wrapped flat or remclamped side by side onto the tray, otherwise the cables shall be stacked on the tray with the use of rem clamps at 600mm centers.
- f. Cantilever arms must be used to carry cables horizontally across suitable walls.
- g. All internal cableways must be incombustible and protected against fire in compliance with applicable building regulations.

- h. Cable entry points through the outer wall must be made watertight against vertical and horizontal precipitation. The carrying of cables through the roof shall be avoided if at all possible to avoid the risk of water ingress into the Building.
- i. Where cables must be carried through fire rated walls the integrity of the fire barrier must be maintained with the use of permanent fire sealing. Metal trays and ladders shall be separated on either side of the fire barrier.

## **Article 10. Access**

### **1. Access for Personnel**

- a. All structures and Sites must be designed to reduce the risk from accessing elements of the Site to the lowest level that is reasonably practicable, taking into account the characteristics of the Site elements, the likely frequency of access, the tools, equipment and competence available to personnel who may be required to access an element of the Site.
- b. The design must provide for the safe access of personnel, plant and equipment during the construction, and subsequent operation and maintenance of the Public Radiocommunications Stations installation.
- c. Only suitably qualified personnel are to access the cabling and Antenna.
- d. Where permanent access is required, safe access routes shall be indicated on the Detailed Design Drawings.
- e. Appropriate measures to prevent unauthorized access to Site or Site equipment must be put in place at time of Site design, construction or modification.

### **2. Anti-climb Barriers, Boundary Walls, Fences and Gates**

- a. All Sites that can be accessed by ladder system or by climbing the structure itself shall be provided with an anti-climb barrier specific to the Site.
- b. Boundary walls must be of the type and height set out under GDCD requirements.
- c. The extent of the fence and position and size of gates must be shown on the Detailed Design Drawings of each Greenfield Site.
- d. Any alterations must not compromise the security of the Site.

- e. Palisade steelwork must be grade S275 and the fencing must comply with all relevant standards and regulations.
- f. When required, a temporary fence must be erected for protection of the general public, animals and property during the construction process. The fence must be erected at all times to protect the construction working area in accordance with all relevant standards and regulations.
- g. The Operator must install a secure Site-specific gate type taking account of the location, layout and access constraints of the Site. Gates shall have operable locking mechanisms.
- h. The fencing system must be bonded to the Site earth grid. Earth braids shall be used to connect the gates to the main body of the fencing.
- i. For Greenfield Sites the fencing of concrete, blockwork, palisade or other suitable material must be used. For rooftop sites a secure gate, door or hatch shall be locked to prevent unauthorized access to the equipment.
- j. The doors and windows to the Building shall be fitted sufficiently to ensure against unauthorized entry with due regard to location.
- k. There shall be an intruder alarm system or other means of intruder detection installed in the Site. The intruder detection system shall be linked to the appropriate network monitoring center.

### 3. Roof-top Access

- a. In addition to the actions required for minimizing work at height set out in Article 5 of this Schedule, at the design stage for a rooftop Site consideration must be given to safety signage, designated walkways, lighting, permanent fixed handrail or forms of fall arrest.
- b. All access routes for Workers shall be clearly indicated on the roof with both signage and painted borders to indicate safe access routes.
- c. Routes for maintenance purposes across roofs shall be designated in the Detailed Design Drawings. The design of routes must ensure that there is:
  - i. Continuity of edge protection where necessary;
  - ii. Provision of appropriate fall arrest systems, where it is not possible to install necessary permanent edge protection
  - iii. Unobstructed access, including the provision of bridge-ways for crossing ducts, pipes and other obstructions;

- iv. Nonslip surfaces;
  - v. Provision of appropriate fall arrest systems; and
  - vi. Adequate lighting where access at night is required.
- d. Existing lighting must be sufficient to enable safe access for the Workers during permitted working hours. Access routes where appropriate shall also incorporate emergency lighting to the standard IS 3217 – Emergency Lighting.
  - e. Where access routes to equipment or locations where persons are required to work are within two (2) meters of an unprotected edge or where there is a risk of falling, permanent edge protection must be incorporated into the design and installed during construction.
  - f. Appropriate measures to prevent unauthorized access to rooftop Sites or Site equipment shall be implemented.

#### 4. Ladder Access

- a. Ladders through skylights or openings must be designed to ensure that they provide safe access, including adequate provision for the ladder to extend at least one (1) meter above the landing point or some other adequate handhold and that the ladders do not create a hazard for Building users, block emergency exits or access routes.
- b. Where work is required off a ladder, appropriate measures must be put in place to allow the Worker to maintain three points of contact.
- c. For fixed ladders the following health and safety requirements must be observed, as a minimum:
  - i. Where appropriate, fixed ladders shall be installed with a fall arrest system.
  - ii. All fixed ladders shall be in good condition and fixed in accordance with the most up to date version of BS 4211:2005 Specification for Permanently Fixed Ladders.
  - iii. Fixed ladders shall have an anti-climb device in place.
- d. Access to rooftops or upper areas of roof using portable ladders shall be avoided where possible and shall only be used when justified following design risk assessment.
- e. Where access is designed using portable ladders an adequate safety zone shall be available to ensure that a fall from the ladder will not result in the user falling from the top of the structure. The following minimum

safety distances must be available in all directions where personnel could fall from a structure at the footing point for portable ladders:

- i. The base of a portable ladder which is less than four (4) meters high must not be placed closer than three (3) meters plus the height of the ladder of any roof edge, e.g., a three and a half (3.5) meter ladder must be at least six and a half (6.5) meters ( $3.5+3$ ) from the roof edge); and
- ii. The base of a portable ladders which is more than four (4) meters high must be at least one and a half (1.5) times the height of the top point plus one (1) meter from any roof edge, e.g., a six (6) meter ladder must be at least ten (10) meters ( $(6 \times 1.5) + 1$ ) from the roof edge.

## 5. Rope Access and Anchors

- a. Sites requiring rope access or abseiling as the only practicable access to build and maintain equipment must be avoided when there is an alternative solution. Rope access and anchor systems shall only be installed as a fall arrest measure where other more suitable fall arrest measures are not feasible.
- b. Wherever construction projects are carried out on Sites which have pre-existing rope access or anchor based fall arrest systems, the Site design shall be reviewed and, where possible, alternate fall arrest systems must be installed.
- c. Where anchor points are required, all fixings shall be applied vertically for roof, and horizontally for wall anchors.
- d. Anchorages shall be installed and tested by suitably qualified personnel with a relevant up to date test certification. No anchor bolts are to be used without prior examination within six (6) months of the day of use by a competent professional.

## 6. Road Access

- a. All roads and footpaths within and adjacent to the Site must be adequately maintained and kept clear of debris and hazards. Any damage to roads and footpaths caused by Site traffic or otherwise must be made good to the satisfaction of the Ministry of Works, Municipalities Affairs and Urban Planning or other owner.
- b. The access road will be set out in the Detailed Design Drawings. The excavation of the access track will describe the formation, which will be compacted, sealed and covered before weather conditions allow deterioration of the ground. Access track shall have sufficient drainage to avoid any debris and rain water washing on to the public roads.



- c. Site warning signs shall be placed where appropriate as required under this Regulation and other applicable laws and regulations.
- d. Site drawings must show the extent of any new roads, for which planning permission must be obtained.
- e. Access roads are to be designed for construction traffic, e.g., concrete delivery trucks and mobile cranes, whilst also providing access for maintenance purposes. Any access track to a Site shall be able to accommodate a mobile crane capable of lifting the relevant Mast into place. The access track shall be a minimum of 3m wide and 300mm deep.
- f. The road make-up must consist of compacted crushed stone on a sub-base of compacted hard-core, with drain trenches, if required finished with a compacted road base.
- g. Where the access track ends in a cul de sac, an adequate turning circle shall be provided to facilitate construction and maintenance traffic.
- h. Any extra access/wayleaves required for the construction of the Site shall be organized by the Operator, who will be responsible for the cost, construction and making good of such accesses.

#### **Article 11. Fall Arrest Systems**

1. Fall arrest or fall prevention systems shall only be used when all other forms of collective protective measures (e.g. handrails) have been deemed to be impracticable. The fall arrest components must be suitable for the individual who shall be trained to fit and use them.
2. Fall arrest systems must be designed with enough clear space below the work position to allow the fall to be arrested safely.
3. There must also be an effective system in place to rescue anyone whose fall has been arrested by the fall arrest system. This will include a safe system of work to retrieve the casualty as soon as possible to prevent injury from suspension trauma.
4. The Operator will follow I.S.EN 365:2004 – Personal Protective Equipment Against Falls from a Height – General Requirements for Instructions for Use, Maintenance, Periodic Examination, Repair, Marking and Packaging – for specific guidance on the use of fall arrest equipment, including instructions for use, maintenance, inspection and repair.

#### **Article 12. Earthworks**

1. The Operator shall indicate the extent of all excavations, indicating the formation level in the Detailed Design Drawings. Soft areas of formation unsuitable for construction shall be removed and filled.

2. The Operator will indicate the extent of all required excavations in the Detailed Design Drawings. All excavation including, but not limited to, the foundations, drainage and trenches necessary for laying of ducts for electrical supply, fibre cables, lightning protection systems and coaxial cables are to be specified on the Detailed Design Drawings with final location accurately recorded on the As Built Drawings.
3. Anyone in an excavation deeper than 1.25 meters must be protected from dislodgement of the sides of the excavation. This protection may be in the form of shoring (support for the excavation), battering (slope the excavation) or other suitable means. Notwithstanding this, all excavations (including those shallower than 1.25 meters) and the area in the vicinity of an excavation must, when people have access to them, be as far as is reasonably practicable safe and without risk to health.

### **Article 13. Foundations**

1. The size of excavation for the foundations must be kept to the minimum required for the construction of the foundation, allowing for the installation of formwork and support where required. The base of the excavations must be dry and well compacted. The formation level must be protected with concrete blinding. After construction of the foundation, the excavation must be backfilled, compacted and brought up to the levels indicated in the Detailed Design Drawings.
2. The foundation must be designed to suit the agreed structural service and loading criteria, with due consideration given to the geotechnical and survey details recorded for the particular Site.
3. The foundation shall be designed to ensure that the structure it carries can be fully utilized in a manner that fully complies with the structures design specification, the applicable design codes of practice and relevant regulations.
4. Foundations must not be greater than 1 meter in depth where practicable.
5. The Detailed Design Drawings must provide the following details of foundation excavation:
  - a. The concrete grade;
  - b. Reinforcement steel grade;
  - c. Base dimensions;
  - d. All necessary setting out details;
  - e. Re-bar schedule;
  - f. Template orientation; and

- g. Holding down bolt arrangement for main structure.
- 6. Where the findings of the Site survey are such that a shallow foundation is unsuitable, the Operator may consider the use of piled foundations.
- 7. When a piling solution is specified, a suitably qualified specialist piling contractor, is to be given responsibility for the pile design and installation.
- 8. Break out old foundations, beds, drains, etc. must be shown in the Detailed Design Drawings to allow installation of new foundations, sealing off drain ends and removing contaminated earths specified.
- 9. Any imported fill material shall be free from contaminants and shall be fit for purpose.
- 10. Suitable imported granular material for use as fill under roads and structures shall be natural crushed rock.

#### **Article 14. Concrete**

##### 1. Structural Concrete

- a. The Operator is responsible to ensure that all concrete structural elements are designed and built in accordance with the Standard Specifications for Construction Works and latest version of the relevant Eurocodes as listed in this Regulation.
- b. All civil and/or structural engineers employed in the design of concrete structural elements must be accredited by the COEPP with the competence required to deliver telecommunications specific designs.
- c. The concrete shall be thoroughly worked around the formwork and reinforcement and shall be thoroughly compacted using mechanical vibration.
- d. The concrete shall be protected after placing and cured in accordance with industry standards. Thermal insulation blankets shall be utilized as required to reduce thermal gradients and minimize the risk of heat shrinkage cracking.
- e. A blinding layer of concrete must be specified to seal the formation and to provide a clean working area. The concrete blinding must be applied on a compact, level, dry and clean formation.
- f. Before the completion of the reinforced concrete works, the surface of the blinding must be thoroughly cleaned.

##### 2. Concrete Grade

- a. Concrete grades that are to be used on Site shall be specified on a Site by Site basis. These grades will be shown clearly in the Detailed Design Drawings.
- b. All concrete must comply with the Standard Specifications for Construction Works and I.S. EN 206-1: 2002, Concrete – Part 1: Specification, performance, production and conformity.
- c. The surface shall be free from voids, honeycombing or other large blemishes. Visible surface of concrete shall be fair faced and visible foundation edges rounded off. Foundation surfaces shall be finished with a 1:40 gradient to allow sufficient water drainage and prevent ponding.

### 3. Formwork

- a. All formwork shall be constructed of timber, sheet metal or other approved material capable of containing, supporting and forming the wet concrete, to the class of finish required, until it has sufficient strength to be self-supporting.
- b. The formwork shall be firmly supported, adequately strutted, braced and tied sufficiently to support the weight of the wet concrete and pressure from placing and compacting the concrete.
- c. The formwork is to be sufficiently rigid to prevent any undue deflection of the forms out of true line and level and be sufficiently tight to prevent excessive loss of water from the concrete.
- d. The size and arrangement of the units of formwork must permit ease of handling, erection and striking (dismantling) on the concrete has sufficiently set.
- e. Formwork must be reasonably watertight to prevent leaks that can lead to honeycombing.
- f. In order to facilitate the removal of formwork and avoid damage to the concrete as the formwork is struck, the surface of the formwork that must be in contact with the concrete is to be coated with a release agent that prevents the wet concrete strongly adhering to the forms.
- g. On formwork to external concrete which will be permanently exposed, all horizontal and vertical joints and formwork ties shall be so arranged that joint lines and formwork tie lines will form a uniform pattern on the face of the concrete.
- h. Faces of formwork that will be in contact with concrete shall be free from adhering foreign matters, projecting rails, splits and other defects. All formwork shall be clean and free from standing water, dirt, shavings and other foreign matter.

- i. All visible concrete must be placed in smooth formwork.
- j. All smooth surfaces must have bevelled corners such as tilting fillets generally 50mm x 50mm.
- k. The finish must be formed using a smooth finish of uniform texture and appearance. The finish is intended to be left as struck but imperfections such as fins, blow holes and surface discolorations must be made good.
- l. Forms placed against existing concrete must be tight to prevent formation of steps.
- m. Care must be taken to ensure forms are struck without disturbing, damaging or overloading the concrete.
- n. Before placing concrete, care must be taken to ensure all holding down bolts, pipes or conduits or any other fixtures which are to be built in shall be fixed in their correct positions, and cores and other devices for forming holes shall be held fast by fixing to the formwork or otherwise.

#### 4. Steel Reinforcement

- a. A steel reinforcement bar schedule must be provided in the Detailed Design Drawings.
- b. All reinforcing steel bars shall be free from loose rust, mill scale, oil or other coating that is liable to weaken the bond between concrete and steel.
- c. To ensure that there is correct concrete cover around the reinforcement to protect the steel from corrosion and to provide adequate fire protection, it is necessary to fix spacing to reinforcement bars between the bars and formwork, or face of concrete.
- d. The spacers must be securely fixed to avoid displacement during placement and compacting of concrete and must be strong enough to maintain the required cover of concrete.
- e. Systems of steel chairs must be used to support the top reinforcement that is cast into pad foundations. The chairs must be substantial enough to support the weight of those spreading and compacting the concrete.
- f. Where required, all reinforcement steel must be safely stored in separate stacks clear of ground and labelled for positive identification.
- g. Where requested to do so, the Operator will supply to the Authority copies of test certificates confirming that all steel complies with the relevant standard.

## Article 15. Steelwork Specification

### 1. General

- a. The steelwork specification for Masts and associated steelwork structures must be designed to the requirements set out in the most up to date versions of the Standard Specifications for Construction Works and I.S. EN1993 Eurocode 3: Design of steel structures and I.S. EN1994 Eurocode 4: Design of composite steel and concrete structures.
- b. Operators must specify steel products that meet European Conformity (CE rated) and comply with other applicable international and national standards.
- c. In addition to this, Operators must specify products that are fit for purpose with considerations given to project design requirements, design life, maintenance requirements, manual handling, transport, build and operational access and cost.
- d. All steelwork must be designed to suit the on-site environmental conditions. All exposed steelwork shall be galvanized. Where time is a limiting factor, stainless steel may be used but under no circumstance should stainless steel be put into contact with galvanized surfaces.
- e. Hollow section steelwork shall be designed to be free draining or capped with a fully welded end plate to prevent the ingress of moisture. Vent holes that do not compromise the structural integrity of a steel section must be included to allow moisture drainage.
- f. Vent holes shall be located such as to prevent the ingress and for accumulation of moisture when the member is in the permanent works.
- g. Water tightness of the parent structure during erection shall be ensured.
- h. All steelwork support details must be designed so as to avoid excessive rotation of Antenna and in particular transmission dishes. All designs must comply with the industrial design limit for rotation of transmission dishes of 0.5 degrees.
- i. The cutting of galvanized steelwork on site shall be avoided where practicable. Any cut steelwork must receive two coats of galvanized paint immediately after cutting in accordance with manufacturer's recommendations. Any cut steel work must be noted in the As Built Drawings.

### 2. Fabrication and Storage

- a. Steelwork joint interfaces where plane surfaces are to be mounted together shall be cleaned; zinc drops, pins and frazes must be removed properly and treated adequately. All bolt connection end plates must be

welded flush to structural members. A gap of 0.5mm maximum, when the bolts are tightened, at the perimeter of the plate only is permissible provided that it is sealed against the ingress of moisture during erection with a suitable material, e.g., clear silicone sealant. The gap must not influence the verticality of the structure.

- b. Traces of flame cutting shall be ground away prior to galvanizing. Narrow cavities between steel parts must not be left open. They shall be closed by welding as specified on the Detailed Design Drawings.
- c. All steelwork shall be labelled in accordance with the marking system shown on the fabrication drawings.
- d. Unless noted otherwise, the steelwork shall be stored off Site prior to inclusion in the permanent works. Steelwork shall be stored to ensure that dirt, water or other deleterious materials do not contaminate it and that it will not be subject to distortion or damage.

### 3. Erection

- a. Steel structures must be erected in accordance with the supplier's guidelines and the Detailed Design Drawings.
- b. A layer of non-shrink grout shall be used to seal connections between steel endplates and concrete. The grout shall be applied between the top face of the concrete and the underside of the steelwork.
- c. Where touch up is required on Site, zinc rich paint shall be applied in accordance with the manufacturer's instructions.
- d. Any safety systems involved in erection must be installed, tested and certified in accordance with the manufacturer's instruction and regulations.

### 4. Dissimilar Metals

- a. Stainless steel connections to copper are acceptable in terms of galvanic corrosion.
- b. Direct connections between copper and galvanized steelwork and stainless steel and galvanized steelwork are unacceptable, as galvanic corrosion will occur in the presence of an electrolyte.
- c. Brass to copper connections are acceptable provided that an appropriate corrosion inhibitor is applied to the joint. The inhibitor shall be reapplied annually when the connection inspected.
- d. Anodized aluminum to galvanized steelwork connections are, in general, acceptable; however, care must be taken during transportation, fitting and use to ensure that the anodized layer is not damaged.

- e. Anodized aluminum should not be used in salt bearing environments, e.g., a marine climate. To avoid electrolytic coupling, galvanized steel requires ventilated areas. The installation shall be so designed as to ensure that water will not be retained in any of the steelwork members.

## 5. Fitting of Antenna Support Steelwork

- a. The integrity of the wall fabric shall determine the type of fixing selected. A full survey of the wall must be carried out where there is any doubt as to the makeup of the wall fabric in order that the correct fixing can be specified.
- b. Mounting brackets fixed to an existing Building must be designed so as to ensure that no damage will be caused to the fabric of the Building or to its weather protection. It is the responsibility of the Operator to ensure that the Building is structurally capable of carrying the necessary fixings.
- c. All fixings must be designed to avoid any risk of water ingress, degradation of Building fabric and waterproofing membranes. Any damage to waterproofing membranes must be immediately protected against immediate water ingress and made good.
- d. Where the Antenna is to be attached directly to the wall, wall mounting swivel brackets shall be used in order to correctly align the Antenna.
- e. In other cases, the Antenna can be attached to a pole, which is attached to existing steel supports with the use of clamps or welded onto existing steelwork internally.
- f. Only structurally suitable structures approved by a competent certified or chartered structural engineer are to be used to fix equipment.

## 6. Ballast Poles

- a. A ballast pole can be used for supporting an Antenna where it is not possible to fix directly to the structure. This consists of a braced pole supported on a counter-weighted steel platform. Concrete paving slabs can be used to act as the ballast. It is the responsibility of the Operator to ensure the structural capacity of the existing roof is safe to carry the ballast pole.
- b. Should the Operator utilize a ballast pole, it must ensure that the ballast pole rests on a bed of high density insulation in order to avoid any risks of damage to the roofing fabric.

## **Article 16. Ducting**

### 1. General



- a. The installation of ducting and associated works must be carried in accordance to the Telecommunications Infrastructure Deployment Guidelines. The duct laying will normally include the excavation, laying in a sand surround and back filling, together with the supply of temporary stop ends and draw-wires.
- b. Where ducting is retro-fitted in the compound, the new route shall be treated for vegetation. Additional anti-weed cloth shall be placed over the new duct route, before finally covering to the original finish standard (e.g. gravel, stone, asphalt, etc.)
- c. Ducting is to be 100mm, 125mm or 150mm plastic duct pipe with bed and surround of 100mm of sand.
- d. For ducting under roadways or trafficked areas lean mix concrete must be used. Minimum cover must be 600mm or 900mm under roads or car park.
- e. Backfill to trench in roadway or trafficked area must be laid in compacted layers of no greater than 300mm.
- f. Backfill to grassed margin must be as dug, and to be reinstated as before.
- g. Shoring to open trenches must be provided where necessary. Expansion foam and /or duct caps must be installed to prevent rodent entry.
- h. All ducts must be recorded in As Built Drawings.

## 2. Underground Ducts

- a. Every effort must be made to coordinate with the Relevant Bodies and written confirmation of approval of works must be obtained in accordance to the Telecommunications Infrastructure Guidelines. The health and safety of the members of the general public must be paramount in such cases.
- b. The ducts must be positioned as shown in the Detailed Design Drawings, which may be modified by the designer and/or contractor as Site conditions dictate. Any changes must be recorded on the As Built Drawings.
- c. Inspection chambers are required, located at changes in direction. Where electrical cables are to be laid directly in the ground they must be laid in the same trench with a minimum clearance of 500mm from any duct and be protected by a sand layer.
- d. Warning tapes must be attached directly on the duct or laid 250mm above the cables showing the nature of the duct / cable. Tapes are to be

continuous, color coded with gauge polythene and must be located below the surface along the route of incoming electrical supply.

- e. Trenches must be as small as practicable with vertical sides. Mud, rock, projections, boulders and hard spots must be removed from trench bottom.
- f. The trench will be filled and compacted after the laying of ducts and cables. Where the trenches are situated in arable land, the top 250mm will be topsoil. All excavations on highway or paved surfaces must be reinstated. No visible setting on the finished surface is acceptable.
- g. All ducts must have one number draw cord installed. The ends of the ducts must be sealed. The positions of the ends of the ducts shall be clearly marked, using a colored maker peg or similar method, at ground level.
- h. The ducts must be of smooth 110mm diameter PVC. The ducts shall meet industry acceptance requirements. If the ducts are placed under the road, the minimum depth is 1100mm.

### 3. Concrete Cable Troughs

- a. The Operator may specify prefabricated concrete cable troughs with reinforced lids fit for purpose. The Detailed Design Drawings must specify the size and type of lid. The bottom of the trench must be level and well compacted. The prefabricated elements must be installed to the manufacturer recommendations.

### 4. Inspection Chambers / Draw Pits

- a. The Operator must specify inspection and/or access chambers constructed on a reinforced concrete base slab. When constructed in brickwork the chambers must be rendered and coated with a waterproofing emulsion both internally and externally.
- b. Depending on the location of the chambers the cover must either be galvanized steel or, when located in areas likely to be trafficked by heavy vehicles, cast iron cover must be used in accordance with all relevant standards and laws and regulations.
- c. When required, earth pits must be either concrete or plastic set into slab or at ground level. They shall have a secure cover and shall allow access for the testing and inspection of the lightning protective / earthing network. The inspection chambers must be free draining.

### 5. Drainage

- a. Where the Site investigation report and survey information indicates grounds water problems, or where existing land drainage is present, the

Operator shall provide a suitable drainage. The design information provided in the Detailed Design Drawings shall include invert levels, gradients, out fall, and soak away locations.

- b. All drains must be laid in accordance with the related specifications of the Ministry of Works, Municipalities Affairs and Urban Planning and manufacturers' recommendations. The Operator will require the Site provider's approval prior to detailing a soak-away pit. The pit shall be constructed inside the Site boundary. The pit shall be of sufficient size to accommodate the drainage requirements.

#### **Article 17. Underground Utilities**

1. All design and build works that involve ground excavations require ground investigation surveys to avoid dangers to and from Underground Utilities.
2. Structures such as Masts, equipment Shelters and other associated outdoor units shall not be erected over Underground Utilities because this may create additional risks for construction workers and could prevent future access to those services.
3. If it is not possible to avoid erecting a structure over an Underground Utility, arrangements must be made with the relevant utility/service provider to relocate the service if this is practicable.
4. Any request for the relocation of Underground Utilities must allow for sufficient time for the relevant utility/service providers to evaluate such proposals and carry out their work.
5. Other options to relocating the Underground Utilities may, after consultation with the concerned utility, include:
  - a. Repositioning structures or parts of structures to ensure that contact with Underground Utilities is avoided whilst the work is being carried out.
  - b. Arranging for the supply contained within the Underground Utilities to be disconnected during the work.
  - c. If neither of these options is practicable, then choosing methods to avoid contact, such as using ground beams to protect the service(s).

#### **Article 18. Site Maintenance**

1. Site Perimeter and Compound
  - a. Boundary walls shall be reasonably maintained and secured from unauthorized entry. Access gates must be in proper working order (i.e. latches, locks, gate receivers, hinges, etc.) to comply with BS 1722: Fences.

- b. Warning signs visible to members of the general public must be installed indicating that the enclosed area is a restricted area.
- c. Equipment mechanical noise and vibration that causes nuisance to host Buildings and the surrounding environment must to comply with the noise level interfering with ordinary comfort or amenity: BS 8233:1999 – Sound insulation and noise reduction for buildings.
- d. Objects that may cause a slip, trip or injury must not to be left on the Site.
- e. No rubbish or waste materials should be left on the Site or its surroundings.
- f. The compound surface of a Site shall be level and compacted so as to avoid any trip hazards. There should be no protruding steelwork that could cause a potential hazard. Any overhead steelwork shall not protrude below 2.1 meters, and there shall be no steelwork protruding from the ground as this could cause a potential trip hazard.
- g. Earth pit covers must be secure, in the proper position and unlikely to be damaged by vehicles to comply with BS 6651: Lightning Protection of Structures.

## 2. Bunding and Containment of Stored Hydrocarbons

- a. In order to prevent accidental spills of oils into the environment, all fuel or oil storage must be contained in appropriate impermeable secondary containment (bund). The volume of the bund should be 110% of the maximum storage capacity of the largest tank or 25% of the total tank volume, whichever is greater.
- b. The secondary containment must contain all fuel storage, filling or dispensing points and fuel lines and must be an enclosed bund.
- c. Where it is necessary to run fuel lines outside the bund, the fuel lines must be protected from damage, and there must be appropriate secondary containment to contain spills. An appropriate drip tray must be formed beneath the pipe work and associated equipment. It must be capable of containing the contents of the fuel in the pipe work from the non-return valve and associated equipment and if necessary, covered to prevent the ingress of rain and unwanted matter.
- d. Sufficient access must be provided to permit any liquid contained in the drip tray to be extracted safely and in a manner so as to prevent liquid being lost to the environment. Joints in pipe work must be kept to a minimum. Consideration must be given to installation of bund alarms where justified based on risk assessment.

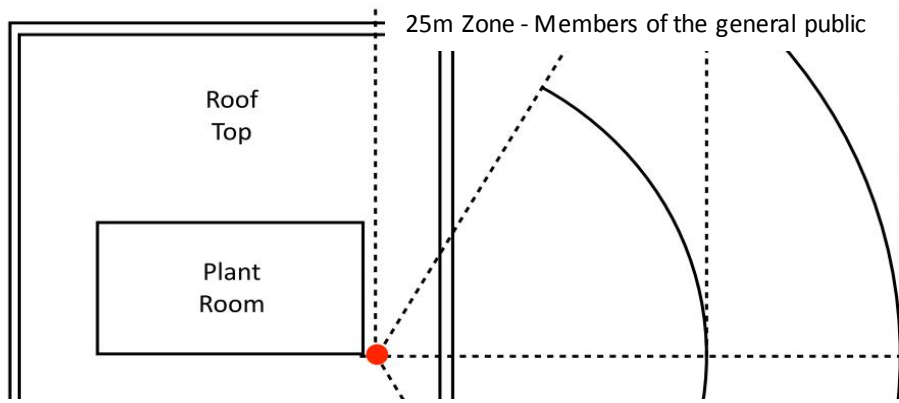
## 3. Landscaping

- a. The landscaping area is to be defined in the Detailed Design Drawings.
- b. Provision must be made for the repair of the damage caused to grass areas and/or vegetation during the execution of the works, or the storage of materials.
- c. The Detailed Design Drawings must detail the requirements for tree planting inside and outside the fenced area. The scope of works shall be agreed with the Site provider and Site acquisition. These agreed details must be made available for the purpose of permit application.
- d. No organic material may appear on finished surfaces and the entire area should be weed free.
- e. Operators will keep the Site area clear of shrubbery, plants, trees, and other vegetation that is not a part of planned landscaping. All cleared material will be taken from Site and disposed of at an approved location.
- f. All existing landscape and neighboring landscapes are to be adequately protected and preserved during the entire build process. Care should be taken not to damage or remove protected trees and landscapes.
- g. Where there is a requirement to temporarily change a landscape it shall be done only with Site provider approval. The landscape is to be returned to a state agreed to the Site provider's satisfaction. A planting schedule will be provided if re-instatement works are required.

## **Article 19. ICNIRP Compliance**

### **1. Antenna Placement**

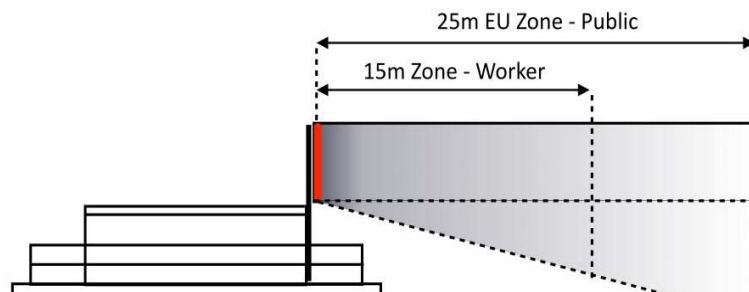
- a. With respect to radio frequency exposure limitations, Operators must endeavor to establish "safe-by-design" restriction distances between all transmitting Antennas and expected presence of Workers and members of the general public.
- b. In particular, Antenna placement must preserve a minimum distances 15 meter zone for Workers and 25 meter zone for members of the general public, as indicated in the diagrams below.



25m Zone - Members of the general public



## Pictorial Representation of ICNIRP



- c. These restriction distances, may be superseded with a Site specific test, on-site with the final equipment by a properly certified engineer, to confirm that the radio frequency radiation is in compliance with ICNIRP guidelines.

### 2. Exclusion Zones

- a. Sites shall be designed so that entry of persons into any Exclusion Zone is prevented. Preferably this shall be by keeping Antennas at specific

heights (approximately two meters and twenty centimeters (2.2 meters) above level of walkway) above adjacent roofs or, where this is not possible by providing physical barriers or signage to warn against access into the Exclusion Zone. Roof markings alone, should not be relied upon to denote Exclusion Zones.

- b. Under no circumstances shall an Exclusion Zone be created on a general access area. A general access area is an area to which it is possible to gain access, either by foot or by unsecured ladder.
- c. Care shall be taken to avoid placing equipment into other Operator's Exclusion Zones, or creating Exclusion Zones around other Operator's equipment
- d. Hazard warning safety signs detailing the extent of the Exclusion Zones shall be clearly displayed at all operational Sites which include Antenna installations as required under sections 4, 5 and 6 below.

### 3. Access Areas

- a. The Operator will delimit areas within and surrounding the Site to identify whether the area should meet the ICNIRP exposure limitations for Workers and members of the general public. There are three typical types of access areas defined: Controlled Access Areas; Restricted Access Areas; and General Public Access Areas.

### 4. ICNIRP compliance obligations for Controlled Access Areas include the following:

- a. Inside the Controlled Access Area, ICNIRP exposure limitations for Workers must be observed. Outside the Controlled Access Area, ICNIRP exposure limitations for members of the general public must be observed.
- b. All Antennas must be positioned so that the Exclusion Zone does not block or extend onto the major access routes of the structure. In the case of Lattice Masts, the access route within the Mast must meet ICNIRP exposure limitations for Workers.
- c. All Workers will use electromagnetic field strength monitors and/or established safe working practices whilst gaining access to Antennas.
- d. There is no requirement for posted Exclusion Zones if the Site meets the "safe-by-design" distances for Antenna placement. However, non-ionising radiation warning signs will be required at the point(s) of entry into the Controlled Access Area.

- e. Operators must certify that all existing Operators present on the Site meet the ICNIRP guidelines for exposure limitations for members of the general public.
5. ICNIRP compliance obligations for Restricted Access Areas include the following:
- a. Inside the Restricted Access Area, ICNIRP exposure limitations for Workers must be observed. Outside the Restricted Access Area, ICNIRP exposure limitations for members of the general public must be observed.
  - b. All Antennas must be positioned so that the Exclusion Zone does not block or extend onto the major access routes of the structure.
  - c. The Antennas should be installed whenever practical as to maintain “safe-by-design” distances. For Sites where the ‘safe-by-design’ criteria is not practical or possible one needs to separate the Exclusion Zone with painted lines or a physical barrier.
  - d. Warning signage must be placed at the boundary edge of the Site.
  - e. All Restricted Access Areas must be individually risk assessed to ensure adequate access control measures are in place.
  - f. Site providers, their employees and outside contractors, who in the likelihood of their work may enter Exclusion Zones, are to be provided with the adequate safety information, containing, the Site drawings, restricted areas, compliance boundaries, the signage explanation and the outage procedures. This information shall be made available to their employees and outside contractors who in the likelihood of their work may enter Exclusion Zones.
6. ICNIRP compliance obligations for General Public Access Areas include the following:
- a. The Antennas should be installed whenever practical as per “safe-by-design” distances.
  - b. For Sites where the “safe-by-design” criteria are not practical or possible a suitable physical barrier with appropriate signage must be erected to prevent inadvertent access by members of the general public into an Exclusion Zone. If neither is possible, then the Antenna will require a permanent and/or mechanical means of limiting the output power to a level where the ICNIRP exposure limitations for members of the general public will be achievable at the closest accessible point.
  - c. Site providers, their employees and outside contractors, who in the likelihood of their work may enter Exclusion Zones, are to be



provided with the adequate safety information, containing, the Site drawings, restricted areas, compliance boundaries, the signage explanation and the outage procedures. This information shall be made available to their employees and outside contractors who in the likelihood of their work may enter Exclusion Zones.

## **Article 20. Fire Safety**

1. All installations and structures must be designed to reduce the risk of fire outbreak, control the propagation of fire in the event of an outbreak of fire, not impede the exit of persons in the event of a fire and be completely compliant with the requirements of the GDCD.
2. All installations in existing, larger Buildings shall be designed and constructed to ensure that the installation meets the requirements of any existing building fire safety design or certification and the requirements of this Regulation, as a minimum.
3. Installations shall not be installed in any location in a Building which would impede or put at risk the safe exit of persons from the Building. Installations shall not be installed in protected corridors or stairwells unless adequate compartmentation or equivalent fire engineering provisions is put in place to maintain the protection of these corridors or stairwells.
4. Rooftop installations shall be designed and installed to ensure that an outbreak of fire in the installation will not put the Building or roof coverings at risk of fire propagation.
5. Provision shall be made at design stage to ensure that there is method to alert rooftop Workers and adequate means of escape to a place of safety outside the Building, from the roof in case of fire in the Building.
6. All electrical installations shall be installed in accordance with the requirements set out in Article 9(4) of this Schedule.
7. Internal linings of Shelters and rooms in larger Buildings must be constructed of materials which restrict the propagation of fire by having a low rate of surface spread of flame, a low rate of heat release or a rate of fire growth and a resistance to ignition. Internal linings shall be at least Class B – s3, d2 as defined in I.S. EN 13501-1:2002, Fire classification of construction products and building elements, Part 1- Classification using data from reaction to fire tests of higher. Where required, part of the surface of a wall in a room, not to exceed half the floor area of the room, may be of a class lower than Class B – s3, d2, but cannot be lower than Class D – s3, d2.
8. All walls, floors and ceilings of standalone cabins which personnel may enter shall be designed and constructed to have at least 15 minutes resistance to fire in terms of load bearing capacity, structural integrity, and insulation.

9. All rooms in which equipment is to be installed in existing larger Buildings shall be designed and constructed as a fire separated compartment with all walls, doors, floors and ceilings having at least sixty (60) minutes resistance to fire in terms of load bearing capacity, structural integrity, and insulation. Where installations are being installed in existing rooms the compartmentation shall be assessed to ensure it meets these requirements.
10. All installations and Sites shall be designed and constructed to ensure that the spread of fire from the installation to neighboring property is prevented by appropriate separation or fire resisting construction or by placing barriers or firebreaks between the combustible areas of installation and neighboring property.
11. Installations shall be designed and constructed so that there is adequate provision for access for fire appliances and for such other facilities as may be reasonably required to assist the fire service.

## **SCHEDULE 11 – PRINCIPLES AND STAGES OF THE RECTIFICATION PROCESS**

### **Article 1. Purpose and Scope**

1. The rectification process is intended to address the requirements and concerns of the various stakeholders in the Telecommunications sector, including those of Residents, Relevant Bodies and Operators, to ensure that the proposed solutions and outcomes of the process balance the needs and expectations of all relevant parties involved.
2. For purposes of this Regulation, Affected Stations are those Legacy Stations that have:
  - a. Been installed without obtaining the required permits and/or certificates and do not adhere to the provisions of any of the following:
    - i. Building Regulations Law promulgated by Legislative Decree No. (13) of 1977, its regulations and amendments thereof;
    - ii. Prime Ministerial Decision No. (28) of 2009 with respect to the Issuance of Zoning Regulations for Construction in Various Areas of the Kingdom; or
    - iii. Decision No. (4) of 2009, issued by the Chairman of the Preservation of Marine Resources, Environment and Wildlife Authority with respect to Regulating and Monitoring of Non-Ionizing Radiation produced by Electromagnetic Fields.
  - b. Obtained the required permits and/or certificates, but where the support structure of said Public Radiocommunications Stations is proven unable to sustain the resulting loads, which may be hazardous to public safety and properties.
  - c. Obtained the required permits and/or certificates, but have been deployed in a manner inconsistent with zoning and any preferred design options established for the zone in question pursuant to Schedule 12.
  - d. Have been installed without obtaining the required permits and/or certificates, but adhere to the zoning and any preferred design options established for the zone in question pursuant to Schedule 12.
3. For the avoidance of doubt, the Rectification Process does not apply to Legacy Stations:
  - a. Used exclusively for (i) military, (ii) national security, (iii) emergency and (iv) medical purposes by government entities; and
  - b. Used for Broadcasting services.

## Article 2. Principles

1. The rectification process will be implemented by the Authority under the framework of Decision No. (45) and this Schedule.
2. The rectification process is intended to address the requirements and concerns of all relevant stakeholders in the Telecommunications sector, including those of Residents, Relevant Bodies and Operators to ensure that the solutions and outcomes of the process balance the needs and expectations of all relevant parties involved.
3. The rectification process is based upon the following principles:
  - a. Transparency: the Authority will implement the rectification process in a manner that ensures:
    - i. Coordination with other Relevant Bodies;
    - ii. Operators are able to actively and effectively participate in the rectification process;
    - iii. Timeframes for compliance are reasonable and sufficient to achieve the objectives of the rectification process; and
    - iv. Stakeholders are regularly informed of the state of progress of the rectification process.
  - b. Predictability: the Authority will implement the rectification process to ensure that, in as much as possible, its decisions and instructions are consistent with this Regulation.
  - c. Protection of public health and safety: the Authority will conduct the rectification process in the manner it determines is best calculated to ensure that Public Radiocommunications Stations:
    - i. Do not create health and safety risks for Persons or property;
    - ii. Do not exceed the Non-Ionizing Emissions Limits produced by Electromagnetic Fields (hereinafter referred to as the “EMF emissions limits”) as set forth under Resolution No. (4) of 2009;
    - iii. Are structurally sound and adhere to technical, health and safety standards defined by the Authority in this Regulation and other applicable guidelines; and
    - iv. Are deployed such that their support structures, including rooftops and other Buildings or structures, are capable of supporting the relevant load.

- d. Limiting unnecessary duplication of stations and promotion of sharing: the Authority will conduct the rectification process and issue decisions and instructions to Operators, following coordination with other Relevant Bodies, to rectify the current status of Public Radiocommunications Stations deployments and to increase the shared use of such stations, especially those within close proximity to each other; and
- e. Limiting negative visual effects: the Authority will implement the rectification process to ensure that the designs of Legacy Station comport with the preferred design options by zone as detailed in Schedule 12 in order to limit the negative effect on visual appearance, surrounding environment, and Residents to the lowest level possible.

### **Article 3. Phases and stages of the Rectification Process**

1. The rectification process will be conducted in the following four phases:
  - a. Phase A: will encompass 20% of Legacy Stations as registered in the RIMS and identified by the Authority as “Phase A” stations;
  - b. Phase B: will encompass 35% of Legacy Stations registered in the RIMS and identified by the Authority as “Phase B” stations;
  - c. Phase C: will encompass 35% of Legacy Stations registered in the RIMS and identified by the Authority as “Phase C” stations; and
  - d. Phase D: will encompass 10% of Legacy Station registered in the RIMS and identified by the Authority as “Phase D” stations.
2. Each Phase of the rectification process will be conducted in the following stages:
  - a. Stage 1: Submission of Rectification Application, in which the Operators submit applications for those Legacy Stations identified by the Authority for the relevant Phase;
  - b. Stage 2: Review of Rectification Applications, in which the Authority confirms the classification by the Operator of the Legacy Station in question and determines if remedial action is warranted;
  - c. Stage 3: Proposed Remedial Actions, in which the Operator shall propose remedial action(s) to enable the Affected Station to become compliant with the requirements set forth in Decision No. (45) and this Regulation; and
  - d. Stage 4: Review of Revised Rectification, in which the Authority and other Relevant Bodies will review the proposed remedial actions and, if warranted, issue the relevant permits and certificates in accordance with the Full Permit Process described in Schedule 2.

- Article 6 of this Schedule describes each of the stages of the process in further detail.

#### Article 4. Classification of Legacy Stations

- Operators must classify each of the Legacy Stations during Stage 1 of the rectification process to determine which are to be considered as an Affected Station and thus subject to the rectification process as set forth under Decision No. (45) and this Regulation.
- To determine which Legacy Stations will be considered Affected Stations, a two-step review process to classify stations will be used as described in sections 3 and 4 below.
- First, Legacy Stations are to be classified into the following broad categories:

Category	Scenario	Review process
1	Legacy Stations used for (i) military, (ii) national security, (iii) emergency and (iv) medical purposes.	Not an Affected Station, and therefore not subject to the rectification process under Decision No. (45) or this Regulation
2	Legacy Stations used for services other than Telecommunications (e.g., Broadcasting).	Not an Affected Station, and therefore not subject to the rectification process under Decision No. (45) or this Regulation
3	Legacy Stations in restricted Sites, including in premises controlled by the Royal Court and other potentially sensitive areas.	An Affected Station, but subject to an <i>Ad hoc</i> review process as determined by the Authority.
4	Legacy Stations under ongoing litigation processes or which are subject to judicial rulings.	An Affected Station, but subject to <i>Ad hoc</i> review process as determined by the Authority.
5	All other Legacy Stations that are not Categories 1-4.	An Affected Station subject to the general review process set forth under this Regulation.

- Second, Category 5 stations identified in section 3 above shall be further subdivided into the following classification:

Category	Description	Review process
5-A	Affected Stations that (i) do not have a Building Permit and (ii) do not comply with Building Law, Zoning Regulations, EMF emissions limits.	Full Permit Process Required
5-B	Affected Stations that (i) have been issued a Building Permit and (ii) the structure is proven unable to sustain resulting loads	Full Permit Process Required

	and poses risks for health and safety and property.	
5-C	Affected stations that (i) have been issued a Building Permit and all other relevant certificates, but (ii) do not comport with zoning requirements in Schedule 12.	Full Permit Process Required
5-D	Affected Stations that (i) do not have a Building Permit, but (ii) comply with Building Law, Zoning Regulations, EMF emissions limits and (iii) comport with zoning requirements in Schedule 12.	Full Permit Process Required
5-E	Affected stations that (i) have been issued a Building Permit and all other relevant certificates, and (ii) comport with zoning requirements in Schedule 12.	Authority shall issue Final Permit within five (5) days of concluding Stage 2 review

#### **Article 5. Applications fees and fines**

1. The Authority will seek to ensure that no additional application fees will be payable by an Operator with the filing of a Rectification Application, where it can be demonstrated that the Operator has paid the required fees to all Relevant Bodies for such permits and/or certificates in the past.
2. Notwithstanding the provisions of Article 23 of the Building Regulation Law, the Authority and the Relevant Bodies will collaborate to decide whether any applicable fines associated with the deployment of an Affected Station may be subject to waiver in cases where:
  - a. The Operator, or group of Operators, that owns or controls the Affected Station has fully complied with all requirements set forth under this Regulation to the satisfaction of the Authority and the Relevant Bodies;
  - b. The Affected Station or associated support structure must be decommissioned as a consequence of remedial action undertaken in the rectification process; or
  - c. Other cases where the Relevant Bodies and the Authority may deem a waiver is warranted.

#### **Article 6. Implementation of the Rectification Process**

1. Stage 1: Submission of Rectification Applications
  - a. The Authority will identify the Legacy Stations subject to review under each Phase of the rectification process at least two weeks prior to the date of commencement of Stage 1 of the Phase in question.
  - b. Operators shall file complete Rectification Applications for the Legacy Stations identified for each of the Phases as specified in Schedule 13

via the Public Radiocommunications Information Management System (“RIMS”).

- c. Rectification Applications shall include the information detailed in Schedule 14.
- d. Operators shall each file no more than four (4) Rectification Applications per day.
- e. If an Operator fails to file rectification applications for any of its respective Legacy Stations identified for a given Phase of the rectification process within the specified timeframe, the Authority may take enforcement actions as set out in Chapter VII of this Regulation.

## 2. Stage 2: Review of Rectification Applications

- a. The Authority will review each Rectification Application to ensure that it is compliant with Schedule 13 and that it includes all information required under Schedule 14.
- b. If the Authority determines that a Rectification Application is incomplete, or that further clarification is required, the Authority will direct the Operator to file supplemental information within five (5) working days.
- c. If the Authority determines that the Rectification Application for an Affected Station is complete, the Authority verify whether such station has been properly classified by the Operator in accordance with sections 3 and 4 below. If the Authority believes the Operator has misclassified the Affected Station, it directs the Operator to provide clarification within five (5) working days.
- d. The Authority will determine on a case-by-case basis the review process to be implemented for the rectification of all Affected Stations designated as Category 3 and Category 4 stations as defined in Article 4 above.
- e. For Affected Stations confirmed as Category 5A, 5B and 5C, the Authority will inform the Operator that it must propose appropriate remedial actions in accordance with subsection (3)a below.
- f. For Affected Stations confirmed as Category 5D no remedial actions will be required, and the Authority will continue reviewing the application in accordance with the Full Permit Process as described in Schedule 2.
- g. For Affected Stations confirmed as Category 5E no remedial actions will be required, and the Authority will issue the Final Permit within five (5) days of making such determination.

## 3. Stage 3: Proposed Remedial Actions



- a. In cases where the Authority determines remedial action is necessary, the Operator must propose remedial actions consistent with Schedule 12. Remedial actions may include Site sharing with other Operators, modifying the Affected Station or engaging in any other actions to achieve compliance with this Regulation.
- b. Once an Operator has identified the proposed remedial action for an Affected Station, it must submit a revised Rectification Application to the Authority. The revised rectification must be filed within the timeframe set out in Schedule 13 and include all the relevant information set forth in Schedule 14. An Operator may not submit more than four (4) Rectification Applications per day.

#### 4. Stage 4: Review of Revised Rectification

- a. The Authority will review the revised Rectification Application in accordance with the Full Permit Process as described in Schedule 2.
- b. In particular, the Authority will ensure that the remedial actions proposed in the revised Rectification Application comply with the preferred design options set forth in Schedule 12.

#### 5. Status reports

- a. To ensure transparency of the rectification process, the Authority will publish quarterly status reports that will provide information on the following issues:
  - i. Assessment of compliance with the proposed rectification process timeline;
  - ii. Aggregate number of Public Radiocommunications Stations being processed; and
  - iii. Aggregate number of Public Radiocommunications Stations that have been rectified per Municipality.

**SCHEDULE 12 – PREFERRED PUBLIC RADIOCOMMUNICATIONS STATION DESIGN OPTIONS FOR THE RECTIFICATION PROCESS**

1. The following table summarizes preferred design options by zone for Affected Stations applicable under this Regulation.
2. The Authority shall publish a map identifying the various zones described in the table below to assist Operators in the process of submitting Rectification Applications for Affected Stations. This zone map shall be made available through the RIMS.

Zone	Type of Station					
	Camouflaged or Stealth Solution	Wall Mounts / Stub Mast	Small Scale Station / Street-works	Mono-pole	Rooftop Mast	Lattice or Guyed Mast
Places of Interest	Allowed	Allowed	Allowed	Not Allowed	Not Allowed	Not Allowed
<200m from Major Roads	Allowed	Allowed	Allowed	Not Allowed	Not Allowed	Not Allowed
Residential/Housing Areas	Allowed	Allowed	Allowed	Allowed	<i>Condition ally allowed</i>	<i>Condition ally allowed</i>
Commercial Districts	Allowed	Allowed	Allowed	<i>Condition ally allowed</i>	Not Allowed	Not Allowed
Industrial/Factory Areas	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed
Rural Locations/ Low Populated Area	Allowed	Allowed	Allowed	Allowed	Allowed	Allowed

Note: “<200m from Major Road” means less than 200 meters from the center of a Major Road.

3. Types of Stations that may be conditionally allowed must meet the following criteria:
  - a. The Mast must be deployed outside of a 200-meter radius of any other existing Mast; and
  - b. Existing topography, vegetation, Buildings or other structures screen the Mast such that the visibility from its Viewshed is minimal; or
  - c. The Mast blends with common utility structures or is otherwise effectively camouflaged; or
  - d. The Mast is deployed out of public view.

## SCHEDULE 13 – TIMELINE FOR THE RECTIFICATION PROCESS BY PHASE

1. This Schedule provides the general timeline for the implementation of the rectification process and the compliance thresholds that Operators must adhere to in each zone.
2. The Authority, in coordination with Relevant Bodies, may modify this timeline if it is deemed justified to better achieve the objectives of the rectification process.

	<b>Stage 1</b>	<b>Stage 2</b>	<b>Stage 3</b>	<b>Stage 4</b>
	<b>Rectification Application Period</b>	<b>Review of Rectification Applications</b>	<b>Remedial Action Investigation</b>	<b>Second Review of Rectification Applications with Remedies</b>
<b>Phase A</b>	Months 1 -7 following Effective Date of Implementation of this Regulation	5-10 days after receiving application under Stage 1	Completion of Stage 2 Review + 5 months	
<b>Phase B</b>	Months 8 -19 following Effective Date of Implementation of this Regulation	5-10 days after receiving application under Stage 1	Completion of Stage 2 Review + 5 months	
<b>Phase C</b>	Months 20 -39 following Effective Date of Implementation of this Regulation	5-10 days after receiving application under Stage 1	Completion of Stage 2 Review + 5 months	
<b>Phase D</b>	Month 40 to end of year 9 following Effective Date of Implementation of this Regulation	5-10 days after receiving application under Stage 1	Completion of Stage 2 Review + 5 months	

3. The compliance thresholds below indicate the percentage of the total number of Affected Stations identified for a specific Phase that must comport to permit

requirements in this Regulation and the preferred design options by zone set forth in Schedule 12 within a given timeframe.

	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 5-9</b>	<b>Year 10</b>
<b>Phase A</b>	100%	100%	100%	100%	100%
<b>Phase B</b>	0%	50%	100%	100%	100%
<b>Phase C</b>	0%	33%	66%	100%	100%
<b>Phase D</b>	0%	20%	30%	40%	50-90%

4. The Authority, in coordination with the Relevant Bodies, may modify the timeline and the compliance thresholds provided in this Schedule when such decisions are deemed justified to better achieve the objectives of the rectification process.

## **SCHEDULE 14 - RECTIFICATION APPLICATION DOCUMENTS**

1. Rectification Applications must be filed using the system and forms provided by the Authority and must contain the following documents:
  - a. Legacy Public Radiocommunications Station Application Form
  - b. Site Data Form and Statement of Compliance
  - c. Municipalities Application Form
  - d. Civil Aviation Administration Application Form
  - e. Supreme Council for the Environment Application Form
  - f. General Directorate of Civil Defence Application Form
  - g. Bahrain Defence Force Application Form
  - h. Construction Drawings Requirements
  - i. Structural Calculations Form
  - j. ICNIRP Compliance Form
  - k. As-Built Photo Requirements
  - l. Power and Earthing Certificate Form

## Legacy Public Radiocommunications Station Application Form

### Part A: Contact Information

Name of Operator: \_\_\_\_\_

Name of Contact at Operator: \_\_\_\_\_

Email of Contact: \_\_\_\_\_

Phone Number of Contact: \_\_\_\_\_

### Part B: Site Identification Information

Site Name (The Operator's name for the Site) \_\_\_\_\_

Site ID (The Operator's unique Site ID #) \_\_\_\_\_

Coordinates of Site (Easting, Northing or GWS) \_\_\_\_\_

Station Name & ID (if different from Site) \_\_\_\_\_

### Part C: Category of Station by legal status

Please check one of the following (refer to Schedule 11)

Category	Document	Tick
3	Station in restricted Sites, including in premises controlled by the Royal Court and other potentially sensitive areas.	
4	Station under ongoing litigation process or which is subject to judicial rulings.	
5	Other Affected station (not Categories 3 or 4), please specify which below	
5A	Affected Station that (i) does not have a Building Permit and (ii) does not comply with Building Law, Zoning Regulations, EMF emissions standards.	
5B	Affected Station that (i) has been issued a Building Permit and (ii) the structure is proven unable to sustain resulting loads and poses risks for health and safety and property.	
5C	Affected Station that (i) has been issued a Building Permit and all other relevant approvals, but (ii) do not comport with zoning requirements in Schedule 12.	
5D	Affected Station that (i) does not have a Building Permit, but (ii) comply with Building Law, Zoning Regulations, EMF emissions standards and (iii) comport with zoning requirements in Schedule 12.	

5E	Affected Station that (i) has been issued a Building Permit and all other relevant approvals, and (ii) comport with zoning requirements in Schedule 12.	
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**Part D: Site Sharing Status**

Please check one of the following:

Item	Document	Tick
1	This is an existing Station that is already co-located on a shared Site	
2	This is an existing Station not on a shared Site, but requiring no modification	
3	This is a proposed modification of an existing Site, which includes co-locating on a shared Site.	
4	This is a proposed modification of an existing Site for which Site sharing has been considered, but found not appropriate (please attach TRA approval of modification)	

**Part E: Filing Document Checklist**

Item	Document	Tick
1	Site Data Form and Statement of Compliance	
2	Municipality Building Permit Application Form (unless already have, see item 11)	
3	CAA Application Form (unless already have, see item 13)	
4	SCE Application Form (unless already have, see item 14)	
5	GDCD Application Form	
6	BDF Application Form	
7	Site Construction Drawings Form	
8	Structural Calculations Form	
9	ICNIRP Compliance Form	
10	Lease Doc/HOTs	
11	Building Permit Acceptance, if obtained	
12	Road Permit Acceptance, if obtained	
13	CAA Non-objection Certificate, if obtained	
14	SCE Non-objection Certificate, if obtained	
15	Power & Earthing Test Certifications	
16	As built Photos Requirements	

**Part F: Filing Information**

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_



## Site Data Form and Statement of Compliance

### Part A: Site Identification Information

1. Site Filing Operator: \_\_\_\_\_
2. Site Name (The Operator's name for the Site): \_\_\_\_\_
3. Site ID (The Operator's unique Site ID #): \_\_\_\_\_
4. Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_
5. Physical Address: \_\_\_\_\_
6. Region: \_\_\_\_\_

### Part B: Site Description

7. Site AMSL (elevation of the top of the structure relative the mean sea level):  
\_\_\_\_\_

8. Site Height (height of the structure or installation from its Foundation Connection): \_\_\_\_\_

9. Site Class (check as applicable)

- Rooftop
- Grounded
- In-building
- Co-location\*

\*In the case of co-location, indicate the other Operator(s) resident on the Site

\_\_\_\_\_

10. Site Type (check as applicable)

- Small-scale (Micro-, Pico-, Femto-cells)
- Streetworks
- Wall-Mounted
- Stub Mast
- Temporary Site/Cell On Wheels
- Monopole
- Guyed Mast
- Lattice Mast
- Other. Specify:

11. Is this Site subject to ongoing litigation process or which are subject to judicial rulings? \_\_\_\_\_. If yes, please attach details.

12. Is the Site located in potentially sensitive areas or otherwise require special considerations in the permitting review? \_\_\_\_\_ . If yes, please attach details.

Part C: Statement of Compliance

Is this Site compliant with all aspects of Schedules 11 and 12? \_\_\_\_\_

If no, please describe aspects of non-compliance below (if additional space is necessary, please attach)

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Part D: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

# Municipalities Application Form

## Part A: Contact Information

Name of Operator: \_\_\_\_\_

Name of Contact at Operator: \_\_\_\_\_

Email of Contact: \_\_\_\_\_

Phone Number of Contact: \_\_\_\_\_

## Part B: Site Identification Information

Site Name (The Operator's name for the Site) \_\_\_\_\_

Site ID (The Operator's unique Site ID #) \_\_\_\_\_

Coordinates of Site (Easting, Northing or GWS) \_\_\_\_\_

## Part C: Description of Scope of Work to be carried out, if necessary:

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Part D: Submitted Documents Checklist

Item	Document	Tick
1	Building Permission Application	
2	Committee of Organizing Engineering Practice License	
3	Owner(s) CPR or CR	
4	Title Deed Including Plot Map & Air Map	
5	Survey Certificate or approved Schematic Plan (original, stamped, valid and identical to Title deed)	
6	For New Buildings, Architectural Plans (Black and white, the project ID should be written right top side of the drawings)	
7	Structural Plans for Site (Black and white, the project ID should be written right top side of the drawings)	
8	Loading certificate (signed and stamped by two, grade A, engineering office with structural activity)	
9	Article 32 Report if necessary (please refer to Article 32 of the Regulation)	

Part E: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

## **Civil Aviation Administration Application Form**

Please attach form found at:

<http://www.mtt.gov.bh/Uploads/Documents/CAA%20Forms/Airport%20Access%20Permits/Application%20for%20High%20Rise%20Structures.pdf>

## Supreme Council for the Environment Application Form

### Part A: Site Identification Information

1. Site Filing Operator: \_\_\_\_\_
2. Site Name (The Operator's name for the Site): \_\_\_\_\_
3. Site ID (The Operator's unique Site ID #): \_\_\_\_\_
4. Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_
5. Physical Address: \_\_\_\_\_
6. Region: \_\_\_\_\_

### Part B: Antenna Information

7. Types of Antennas:

\_\_\_\_\_

8. Number of Antenna for each type:

\_\_\_\_\_

9. Height of Antennas from ground:

\_\_\_\_\_

10. Height of Antennas from rooftop:

\_\_\_\_\_

11. Tilt angle of Antennas:

\_\_\_\_\_

12. Maximum Output Power:

\_\_\_\_\_

13. Effective Isotropic Radiated Power (EIRP):

\_\_\_\_\_

14. Gain:

\_\_\_\_\_

15. Radiation Pattern of Antenna

\_\_\_\_\_

16. Frequencies:

\_\_\_\_\_

Part C: Statement of ICNIRP Compliance

I declare that a) I am a representative of the Operator filing this Application and b) the proposed Site and Public Radiocommunications Station conforms to the requirements of Decision No. (4) of 2009 and ICNIRP requirements.

Name of Operator Representative:

\_\_\_\_\_

Signature of Operator Representative:

\_\_\_\_\_

Date of Filing: \_\_\_\_\_

## General Directorate Civil Defence Application Form

### Part A: Site Identification Information

1. Site Filing Operator: \_\_\_\_\_
2. Site Name (The Operator's name for the Site): \_\_\_\_\_
3. Site ID (The Operator's unique Site ID #): \_\_\_\_\_
4. Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_
5. Physical Address: \_\_\_\_\_
6. Region: \_\_\_\_\_

### Part B: Compliance Checklists

Site Access and Perimeter. Appropriate measures to prevent unauthorised access to Site or Site equipment:

Item	Document	Tick
1	Security Fencing around the full perimeter where the risk of unauthorized access requires	
2	Access gates in full working order	
3	Compliance with BS1722 - Fences	
4	Warning signs visible to public indicating enclose area is a restricted area	
5	For Building, door sensor intruder alarm or other means of intruder detection installed	



Anti-climb Barriers. Adequate prevention of unauthorised climbing

Item	Document	Tick
1	Anti-climb barrier to prevent access to Site if no boundary fencing exist	
2	Anti-climb barrier to prevent climbing the structure itself	
3	Fixed ladders have a fall arrest system compatible with FABA System A12 or FABA System AL2	

Containment of Stored Hydrocarbons. Appropriate measures to prevent accidental spills into the environment

Item	Document	Tick
1	All fuel or oil storage contained in an appropriate impermeable secondary containment (Bund)	
2	Volume of Bund 110% of the maximum capacity of the largest tank or 25% of the total tank volume, whichever is greater	
3	Bund contains all fuel storage, filling or dispensing points and fuel lines.	
4	Fuel lines outside Bund, protected from damage and other secondary containment measures undertaken	
5	Sufficient access to permit any liquid contained in the drip tray to be extracted safely and without being lost to the environment	

Electrical. Measures to prevent harm to public from electrical installations

Item	Document	Tick
1	Electrical enclosures securely closed and free of any visible damage	
2	Suitable aircraft warning lights installed on all Sites where required	
3	Suitable signs using the standard safety pictograms, words and colours highlighting electrical hazards	

Fire Safety. Measures to reduce the risk of fire outbreak, control the propagation of fire in the event of an outbreak of fire and should not impede the exit of Persons in the event of a fire.

Item	Document	Tick
1	Site shall include One (1) Carbon Dioxide 5kg extinguisher	
2	All installations in existing larger Buildings designed and constructed to ensure that the installation meets the requirements of any existing government Building fire safety standard or certification.	
3	No Building installations in any location which would impede or put at risk the safe exit of Persons from the Building.	

4	Internal linings of cabins, enclosures and rooms in larger Buildings constructed of materials which restrict the propagation of fire by having a low rate of surface spread of flame, a low rate of heat release or a rate of fire growth and a resistance to ignition. Internal linings at least Class B - s3, d2 as defined in I.S. EN 13501-1:2002, Fire classification of construction products and building elements, Part 1- Classification using data from reaction to fire tests of higher. Where required, part of the surface of a wall in a room, not to exceed half the floor area of the room, may be of a class lower than Class B - s3, d2, but cannot be lower than Class D - s3, d2.	
5	All walls, floors and ceilings of standalone cabins, which personnel may enter, designed and constructed to have at least fifteen (15) minutes resistance to fire in terms of load bearing capacity, structural integrity, and insulation.	
6	All rooms in which equipment is installed in existing larger Buildings designed and constructed as a fire separated compartment with all walls, doors, floors and ceilings having at least sixty (60) minutes resistance to fire in terms of load bearing capacity, structural integrity, and insulation.	
7	Installation designed and constructed to prevent spread of fire from the installation to neighbouring property by appropriate separation or fire resisting construction or by placing barriers or firebreaks between the combustible areas of installation and neighbouring property.	
8	Installations designed and constructed so that there is adequate provision for access for fire appliances and for such other facilities as may be reasonably required to assist the Fire Service to controlling a fire.	

Part C: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

## Bahrain Defence Force Application Form

### Part A: Site Identification Information

1. Site Filing Operator: \_\_\_\_\_
2. Site Name (The Operator's name for the Site): \_\_\_\_\_
3. Site ID (The Operator's unique Site ID #): \_\_\_\_\_
4. Station Name and ID, if different from Site Name and ID:  
\_\_\_\_\_
5. Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_
6. Physical Address: \_\_\_\_\_
7. Region: \_\_\_\_\_

### Part B: Height and Video Capabilities

8. Site Height from Ground Level: \_\_\_\_\_
9. Maximum Works Elevation for Installation and Maintenance Personnel:  
\_\_\_\_\_
10. CCTV or other video monitoring capability

Number of devices	
Location of device(s)	
Focal length of lens	
Resolution of the sensor	
Night vision capable?	
Orientation of devices	

### Part D: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

## Construction Drawings Requirements

### Part A: Site Identification Information

Site Filing Operator: \_\_\_\_\_

Site Name (The Operator's name for the Site): \_\_\_\_\_

Site ID (The Operator's unique Site ID #): \_\_\_\_\_

Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_

### Part B: Submitted Construction Drawings Checklist

Item	Description	Tick
1	Site Location Plan: (With a scale of 1:2500 as a maximum or any other suitable scale for the Site area) which shall include as a minimum the following: i. General location with the area marked in black colour. ii. Position of the station within 100 meters from the Site. iii. Access and adjacent roads to the Site.	
2	Station Layout/Design Plan: (With a scale of 1:500 as a maximum) which shall show the following: i. Site boundaries. ii. Intended landscaping. iii. Means of access to the Site.	
3	Architectural Drawings: (With a scale of 1:100 as a maximum) which shall show the following: i. Floor plans, if any. ii. Front elevations with the external appearance of the equipment and places for housing the radio equipment with the proposed colours. iii. Cross sections of the station with details of height and level, if any. iv. Structural drawings of the foundations and floors.	
3	Roof Plans (if relevant): Apply to projects with installation of on roof tops stations (A scale of 1:100 is suitable) which shall show the following: Complete roof of Building.	
4	Detailed Structure / Antenna Support Drawings (A scale of 1:100 is suitable), which shall show the existing and proposed equipment including Antennas, radio equipment housing, access channels and air conditioning equipment. [Fully Dimensioned]	
5	Construction Specification and Standards Page [reference to codes and standards]	
6	Detailed Foundation Connection Drawings [Fully Dimensioned, indicating structure reactions, material strengths, dimensions, reinforcing steel and embedded anchorage material type, size and location.	
7	Earthing and Electrical Layout Plan Drawing [Fully Detailed]	
8	Site Safety Signage Layout Plan Drawing [Fully Detailed]	
9	Signage Schedule Page [Showing Sign Types and Sizes]	

Part C: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

## Structural Calculations Form

### Part A: Site Identification Information

Site Filing Operator: \_\_\_\_\_

Site Name (The Operator's name for the Site): \_\_\_\_\_

Site ID (The Operator's unique Site ID #): \_\_\_\_\_

Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_

### Part B: Submitted Calculations Checklist

Item	Description	Tick
1	Wind Speed Calculations (based on information provided in the Wind Flow Map of Bahrain from the Meteorological Directorate)	
2	Foundations Calculations demonstrating that the superstructure can be fully utilized	
3	Loading Calculations to demonstrate structures ability to accommodate equipment	

### Part C: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

## ICNIRP Compliance Form

### Part A: Site Identification Information

Site Filing Operator: \_\_\_\_\_

Site Name (The Operator's name for the Site): \_\_\_\_\_

Site ID (The Operator's unique Site ID #): \_\_\_\_\_

Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_

### Part B: Statement of Compliance

The Operator Representative confirms that

- Radio frequency configuration(s) associated with this Site are within the limit approved by ICNIRP and set out in Tables 1 and 2 below,
- The Site has exclusion zone for Antenna(s) around which Persons shall be excluded from entering. (Note: this exclusion zone is maintained by keeping Antennas at two meters and twenty centimeters (2.2 m) above level of walkway, above adjacent roofs or, where this is not possible, by providing physical barriers or signage to warn against access into the exclusion zone. Under no circumstances shall an exclusion zone be created on a general access area, the exclusion zones around other Operator's equipment); and
- Hazard Warning' safety signs detailing the extent of the exclusion zones are clearly displayed at all operational Sites which include Antenna installations, unless the exclusion zone is within a Controlled Access Area, i.e., one in which access is only granted or supervised by competent technical personnel.

**Table 1. Maximum Exposure Relative to Body Weight**

Exposure Type	Frequency Range	Current density for head and trunk (mA/m <sup>2</sup> )	Whole body average SAR (W/kg)	Localized SAR - head and trunk (W/kg)	Localized SAR – limbs (W/kg)
Worker	100 kHz-10 MHz	f/100	0.4	10	20
	10 MHz-10 GHz		0.4	10	20
general public	100 kHz-10 MHz	f/500	0.08	2	4
	10 MHz-10 GHz		0.08	2	4

Where:

- mA/m<sup>2</sup> is milliwatts per square meter;
- f is the frequency in Hertz;
- Specific Absorption Rate (SAR) values are measured in a period of 6 minutes; and
- W/kg is watts per kilogram.

**Table 2. Maximum Exposure with Respect to Electric Field, Magnetic Field and Power Density**

Exposure Type	Frequency Range	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Equivalent Plane Wave Power Density Seq (W/m <sup>2</sup> )
Worker	1-10 MHz	610/f	1.6/f	
	10-400 MHz	61	0.16	10
	400-2000 MHz	3f <sup>1/2</sup>	0.008f <sup>1/2</sup>	f/40
	2-300 GHz	137	0.36	50
general public	1-10 MHz	87/f <sup>1/2</sup>	0.73/f	
	10-400 MHz	28	0.073	2
	400-2000 MHz	1.375f <sup>1/2</sup>	0.0037f <sup>1/2</sup>	f/200
	2-300 GHz	61	0.16	10

Where for frequencies between 100kHz and 10GHz, the averaging time is 6 minutes

Part C: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_



## As-Built Photo Requirements

### Part A: Site Identification Information

Site Filing Operator: \_\_\_\_\_

Site Name (The Operator's name for the Site): \_\_\_\_\_

Site ID (The Operator's unique Site ID #): \_\_\_\_\_

Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_

### Part B: Photo Checklist

Item	Description	Tick or "Not Applicable"
1	Aircraft Warning Light & Cables	
2	North View from Top Tower	
3	East View from Top Tower	
4	South View from Top Tower	
5	West View from Top Tower	
6	Overall Site Compound Aerial View	
7	Rest Platforms	
8	Working Platforms	
9	Ladder Position & Connections	
10	Feeder Support and Cables [lots]	
11	Face Frames for Equipment	
12	Each Piece of Antenna or Dish, etc	
13	Each Tower Panel Section	
14	Each Tower Panel Section Bolts	
15	Splice Plates At each Level	
16	Main Elevation of Tower NORTH	
17	Main Elevation of Tower EAST	
18	Main Elevation of Tower SOUTH	
19	Main Elevation of Tower WEST	
20	Looking in Compound From Gate	
21	Looking at Compound from Road	
22	Picture ALL Equipment Housings	
23	Power Cabinet Pictures	
24	Generator Location and Connection	
25	Open View of Rectifiers	

Item	Description	Tick
26	Switch Fuses	
27	General Compound Condition	
28	Feeder Gantry Runs	
29	Feeder Entry to Equipment Housings	
30	Tower Base and Stubs each leg	
31	Foundation FULL VIEW	
32	Foundation Individual Footing	
33	Depth of Foundation [where possible]	
34	Lightening Protection Tower	
35	Lightening Protection Gantry	
36	Lightening Protection Housings	
37	Earth Pits and Rods [lift lids]	
38	Fall Arrest System & Tag	
39	Anti Climb System LADDER	
40	Anti Climb System LEGS	
41	Paint Condition	
42	Galvanisation Condition	
43	Steel Grade Test Results	
44	Galv Thickness Test Results	
45	Concrete Hardness Test Results	
46	Material Thickness Test Results	
47	GPS Location Tool Photo	
48	Security Hut Pictures	
49	Fuel Level [if possible]	
50	Meter Readings Where Necessary	

**Part C: Filing Information**

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

## Power and Earthing Certificate Form

### Part A: Site Identification Information

Site Filing Operator: \_\_\_\_\_

Site Name (The Operator's name for the Site): \_\_\_\_\_

Site ID (The Operator's unique Site ID #): \_\_\_\_\_

Coordinates of Site (Easting, Northing or GWS): \_\_\_\_\_

### Part B: Submitted Power and Earthing Certificates

Item	Description	Tick
1	Earth Impedance Test Certificate (less than 2 ohms, measured at the earth terminal block)	
2	Sub-systems Power Certificate	
3	Power Company's Connection Certificate or Electrical Test Certificate (for Generator)	

### Part C: Filing Information

Date of Filing: \_\_\_\_\_

Operator Representative Making Filing: \_\_\_\_\_

### **Additional Documents for Submission if Applicable**

1. Lease Document
2. Building Permit Acceptance
3. Road Permit Acceptance
4. CAA NOC
5. BDF NOC
6. GDCD NOC
7. SCE NOC

## **ANNEX 2: CONSULTATION QUESTIONS**

1. Do you agree with the scope, objectives and applicability of the Regulation?
2. Do you agree with the proposed definitions? Which definitions would you revise? Are additional terms necessary?
3. Do you have any other comments on Chapter I of the Regulation?
4. Do you agree with the characterization of which government agency is responsible for issuing each permit or certification?
5. Do you agree with treatment for Temporary Public Radiocommunications Stations and Small Scale Public Radiocommunications Stations?
6. Do you have any other comments on Chapter II of the Regulation?
7. Do you agree that the processes identified are necessary for the Authority to carry out its mandate under Decision No. (45) of 2015? If not, please provide details of your reasoning.
8. Do you have any suggestions or amendments to these processes that might improve their effectiveness?
9. Do you have any other comments on Chapter III of the Regulation?
10. Do you agree the technical requirements identified in Chapter IV and Schedule 10 are consistent with those called for under Decision No. (45) of 2015 and/or other standards required under Bahraini laws or regulations? If not, please provide details of your reasoning.
11. Do you have any suggestions or amendments to these requirements that might improve their effectiveness?
12. Do you believe that additional requirements or guidance needs to be included under the topics presented? Do you believe additional topics need to be covered under these requirements?
13. Do you have any other comments on Chapter IV and Schedule 10 of the Regulation?
14. Do you agree the requirements identified in Chapter V? If not, please provide details of your reasoning.
15. Do you have any suggestions or amendments to these requirements that might improve their effectiveness in achieving the objective of limiting the negative effect on visual appearance, surrounding environment, and the Residents to the lowest level possible?
16. Do you have any other comments on Chapter V of the Regulation?
17. Do you agree with the level and structure of fees for the Authority's issuance of Final Permits and the recurring annual fees? If not, please suggest another approach to ensuring the cost recovery for the Authority's activities for permitting and compliance monitoring activity.
18. Do you agree the requirements and processes identified in Chapter VII? If not, please provide details of your reasoning.
19. Do you agree with the classifications and processes identified in Schedules 11-14? If not, please provide details of your reasoning.

20. Do you have any amendments to the requirements of Chapter VII and Schedules 11-14 that might improve their effectiveness?
21. Do you have any other comments on Chapter VII and Schedules 11-14 of the Regulation?