भारतीय दूरसंचार विनियामक प्राधिकरण

Telecom Regulatory Authority of India

(IS/ISO 9001-2015 Certified Organisation)

Manual on

Rating of Properties for Digital Connectivity Regulations,2024

MESSAGE

Reliable and high-quality digital connectivity is fundamental to India's vision of a digitally empowered economy and society. As technology advances and data consumption surges, seamless connectivity within properties and public spaces has become a critical enabler for businesses, residents, and service providers alike.

The **Manual on "Rating of Properties for Digital Connectivity Regulations, 2024"** is a step toward establishing standardized benchmarks for evaluating digital connectivity across different property types.

This manual provides an objective methodology to assess digital infrastructure readiness, including aspects such as fiber availability, in-building solutions, and overall network quality as per the provisions of the regulation.

By introducing a rating system, we aim to create greater transparency, drive digital connectivity infrastructure improvements, and enable informed decision-making by property managers, telecom operators, and consumers.

As the telecom regulator, TRAI remains committed to fostering an ecosystem that promotes universal, high-quality digital connectivity.

I encourage all stakeholders—property managers, policymakers, real estate regulatory bodies and associations, telecom service providers, infrastructure providers and industry bodies—to embrace this initiative and collaborate toward enhancing digital access in the country and supporting India's transition into a fully connected and digitally inclusive nation.

(Anil Kumar Lahoti)
Chairperson, TRAI

PREFACE

The digital technology innovations have fundamentally reshaped modern society, transforming communication, work, and our interaction with the environment. As our reliance on seamless connectivity intensifies, robust and reliable digital infrastructure within buildings has transitioned from a desirable amenity to an indispensable utility. This encompasses high-bandwidth internet for remote work, ubiquitous mobile coverage for daily communication, and intelligent building systems that optimize energy efficiency and security through real-time data exchange.

However, many existing and newly constructed buildings encounter significant obstacles in achieving comprehensive digital connectivity. These challenges stem from factors such as legacy infrastructure, inadequate planning, and a lack of standardized deployment practices, impeding residents and businesses from fully leveraging the advantages of a digitally interconnected world. Recognizing these critical gaps, the TRAI regulations on "Rating of Properties for Digital Connectivity Regulations, 2024." is aimed at providing the rating framework for digital connectivity within buildings or properties.

This regulation provides a framework to address these challenges by promoting uniform standards, fostering collaboration among stakeholders, and incentivizing the adoption of future-proof technologies. By establishing clear rating framework, these regulations ensure that connectivity infrastructure, including provisions for adequate bandwidth, low latency, and robust signal strength, is integrated as a fundamental component of property development.

We encourage all stakeholders—policymakers, developers, architects, telecommunications providers, and the public—to collaborate in realizing this vision, shaping a future where ubiquitous connectivity is a tangible reality for everyone. The regulation aims to foster an ecosystem where Digital Connectivity Infrastructure (DCI) is co-created as an integral part of any development activity.

This rating manual will serve as a reference to the Digital Connectivity Rating Agencies (DCRAs), property managers, architects, digital infrastructure providers and service providers to plan and implement seamless digital connectivity infrastructure for seamless user experience.

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Abbreviations

Acronyms	Description
BIS	Bureau of Indian Standards
BMS	Building Management System
DAS	Distributed Antenna System
DCI	Digital Connectivity Infrastructure
DCIP	Digital Connectivity Infrastructure Provider
DCRA	Digital Connectivity Rating Agency
DTH	Direct to Home
DWDM	Dense Wavelength Division Multiplexing
ICT	Information and Communications Technology
IoT	Internet of Things
IoT	Internet of Things
IP	Infrastructure Provider
M2M	Machine to Machine Communication
MBBL	Model Building Bye Laws
MOHUA	Ministry of Housing and Urban Affairs
NBC	National Building Code
PM	Property Manager
PON	Passive Optical Network
QoE	Quality of Experience
QoS	Quality of Service
SON	Self-Optimizing Networks
TEC	Telecom Engineering Center
TRAI	Telecom Regulatory Authority of India
TSP	Telecom Service Provider
UPS	Uninterrupted Power Supply
WFA	Work From Anywhere
WFH	Work from Home

1. Introduction

1.1. Overview

Internet access serves as a critical enabler, connecting individuals and businesses to governments, markets, and a wide range of economic and social opportunities. Digital services, including e-payments, e-commerce, and e-identification, are revolutionizing business models across sectors such as financial services, healthcare, and education, while also transforming the delivery and consumption of goods throughout the broader economy. Emerging technologies like Internet of Things (IoT) and Artificial Intelligence (AI) have the potential to further accelerate the growth of the digital economy. In emerging markets, digital connectivity has been a significant driver of development over the past two decades, fostering economic growth, job creation, and poverty reduction. By expanding markets, improving efficiency in both business and government operations, and driving innovation in traditional sectors, digital technologies are unlocking new opportunities for inclusive development.

However, the benefits of digital connectivity cannot be fully realized without universal access to the Internet. Significant progress has been made over the past two decades to increase the reach of telecommunication networks, with 90 percent of the world population covered by a mobile broadband network.

1.2. Importance of Digital Connectivity

The development of resilient, world-class infrastructure—physical, social, financial, and digital—forms a cornerstone of India's strategy to achieve the vision of Viksit Bharat @ 2047. Among these, digital infrastructure has emerged as a critical necessity, often rivaling traditional infrastructure components such as power, water, and transportation. The COVID-19 pandemic not only reshaped the global order but also accelerated the expansion of digital infrastructure worldwide. Comprising the physical resources and systems required to process and utilize data effectively; digital infrastructure has become essential to societal functioning and quality of life. As nations aim to make their digital systems more resilient, agile, and forward-looking, India, with its vast population and technological potential, is well-positioned to assume a leadership role in shaping the future global digital landscape.

The rapid advancement of technologies such as 4G and 5G, coupled with enabling devices and software applications, has profoundly transformed both personal and professional lives while reshaping governance and business models globally. Today, individuals across all age groups increasingly rely on smart devices for activities such as studying, working, and entertainment. The availability of online services, including banking, e-commerce, citizen-centric solutions, and infotainment options like gaming and social networking, hinges on robust digital connectivity. In the modern era, it is almost unimaginable to function without access to these services, emphasizing the critical need for reliable and high-quality digital connectivity.

India's digital transformation holds immense promise, with nearly ~945 Mn internet users as of 31st December,2024[1]and a growing ecosystem of indigenous digital services, platforms, and applications. This transformation could unlock a fivefold increase in economic value in next 5 Years, offering significant opportunities for businesses, startups, and innovators to invest in emerging technologies like AI, blockchain, and drones tailored to India's unique needs. However, the rapid adoption of frontier technologies has placed tremendous pressure on existing digital infrastructure. To harness the full potential of initiatives such as Smart Cities and Smart Health, focus on augmenting and modernizing digital infrastructure is essential to sustain this momentum and enable the seamless integration of advanced technologies into its digital infrastructure.

1.3. Background and Purpose

The purpose of the rating framework is to establish a standardized framework to assess the availability of digital connectivity infrastructure in different categories of buildings and to encourage the stakeholders to improve the telecom network quality of service in properties. The aim is to improve consumer experience, ensure seamless digital connectivity, and promote stakeholder collaboration, making Digital Connectivity Infrastructure (DCI) an integral part of property development. The quality of telecommunication services inside the properties is an integral part of protection of consumer interest.

To provide legal and regulatory trigger for addressing the issue of accessibility and quality of digital connectivity inside properties, the Telecom Regulatory Authority of India has submitted recommendations to the Government on "Recommendations on Rating of Buildings or Areas for Digital Connectivity" dated 20th February 2023 and regulation on "Rating of Properties for Digital Connectivity,2024" dated 25th October 2024. The recommendations and regulations are aimed at creating an ecosystem for co-creations of Digital Connectivity Infrastructure (DCI) as a part of any development activity, be it a Building or an Area

The key objectives of regulation on "Rating of Properties for Digital Connectivity,2024", hereunder referred as the regulation, includes

a. To improve consumer experience by ensuring seamless connectivity inside properties
b. To standardize and promote high-quality digital connectivity in residential, commercial, and public properties
c. To provide a standardized rating system to evaluate properties for their digital infrastructure and service readiness
d. To provide prospective tenants, owners, and businesses with transparent measure of quality of property's digital connectivity
e. To encourage coordination between property managers, Service Providers, DCIPs to implement connectivity standards.

The regulation is applicable for-

i. Property managers who intend to get their property, of minimum specified size, rated for digital connectivity, either voluntarily or under the provisions of applicable laws, rules or regulations
ii. Digital connectivity rating agencies (DCRA), who may evaluate and award ratings for property under these regulations; and
iii. Service providers, who may enter an arrangement with the property manager for development or access of digital connectivity or digital connectivity infrastructure.

1.4. Digital Connectivity Rating Framework

The regulation provides a standardized method to evaluate digital connectivity inside properties. The ratings, provided under the rating framework under the regulation, will enable stakeholders to make informed choices while promoting the development of robust digital infrastructure. The key aspects of rating framework include-

i. Standardized Process

The framework establishes a uniform methodology to assess the digital connectivity of properties and areas across various categories, ensuring comparability and reliability. Properties shall be evaluated based on defined parameters in the regulation such as fiber readiness, mobile network availability, in-building solutions and Wi-Fi infrastructure. Different property types (commercial, residential, industrial, public spaces, hospitals, government offices, transport corridors and many more) may have tailored benchmarks to ensure relevant and fair assessments.

ii. Consistent Quality and Coverage

Integrating Digital Connectivity Infrastructure (DCI) at an early stage in property development ensures that digital services are of high quality, reducing connectivity gaps and enhancing user experience. The framework promotes the inclusion of diverse connectivity options, such as fiber optic networks, 5G and satellite broadband, to enhance resilience Properties will be assessed based on their capability to provide seamless indoor and outdoor network coverage**,** including provisions for small cells, DAS (Distributed Antenna Systems) and Wi-Fi network**.**

iii. Consumer Empowerment

A structured rating system enables consumers and stakeholders to make informed decisions based on digital connectivity performance, driving competitive improvements.

a. **Informed decision-making:** Prospective tenants and buyers can compare properties based on their connectivity rating, ensuring they choose locations with the best digital infrastructure.

b. **Market differentiation:** Property managers and consumers are incentivized to enhance their digital infrastructure to achieve higher ratings, improving property value and marketability.

c. **Future readiness:** Encourages property managers and consumers to adopt emerging technologies to future-proof their properties.

1.5. Objectives of the Rating Manual

The Rating Manual serves as a structured framework designed to ensure a fair, transparent, and standardized approach to assessing digital connectivity under the provisions of the regulation.

1.6. Scope of the Rating Manual

The Rating Manual outlines the detailed methodology to be followed by the stakeholders for assessment of digital connectivity in different categories of properties as per the assessment criteria provided in the "Rating of Properties for Digital Connectivity Regulations, 2024". This document provides a comprehensive guide for all stakeholders involved in implementation and assessment of digital connectivity in properties and areas, including Digital Connectivity Rating Agency (DCRA), Property Manager (PM), and Service Providers.

Key aspects of the manual include a detailed description of the overall rating process for digital connectivity. This process encompasses the registration procedures for DCRAs and property managers. It also specifies the evaluation methodology tailored for distinct property classifications provided in the regulation i.e. Category A properties and Category B properties.

The manual also elaborates on the processes for the award and renewal of ratings. Additionally, it sets forth provisions for a reporting and feedback mechanism, empowering stakeholders to provide input for maintaining and improving the rating framework. Processes for dispute resolution are also detailed, offering structured processes to address and resolve conflicts among stakeholders effectively.

Recognizing the dynamic nature of digital connectivity needs, the manual provides a protocol for the periodic review and updates of the rating manual. This ensures that the manual remain relevant in addressing technological advancements, changing user expectations, and emerging challenges. The manual also includes a section dedicated to guidelines and best practices to be adhered to by property managers and DCRAs, fostering consistency and quality in the implementation of digital connectivity standards.

2. Role of Stakeholders

The following subsections provide an overview of roles of key stakeholders within the ecosystem including the digital connectivity rating agency, property manager, telecom service provider, and digital connectivity infrastructure provider.

2.1. Digital Connectivity Rating Agency (DCRA)

DCRAs play a critical role in evaluating and certifying the quality, reliability, and readiness of digital connectivity in the properties. The responsibilities of DCRA, as per the regulations, include:

i. **Evaluation of property for digital connectivity**: Conduct thorough assessments of the digital connectivity in properties including fiber-optic availability, mobile network coverage, Wi-Fi accessibility, and broadband reliability and use established criteria to evaluate the digital connectivity.

ii. **Issuance of ratings**: Assign objective and transparent ratings based on the evaluation results, providing property managers and stakeholders with a clear indication of connectivity infrastructure and service performance. Generate official rating certificates that property managers can use to demonstrate their digital connectivity standards to tenants, investors, and businesses. DCRA ensures that ratings reflect real-world digital connectivity experiences, helping end-users make informed decisions about properties based on their digital connectivity requirements and available performance.

iii. **Feedback and recommendations**: Provide constructive feedback to property managers on areas for improvement in their digital connectivity infrastructure or services and indicate best practices and enhancements to help property managers achieve higher ratings.

iv. **Collaboration with stakeholders**: Work closely with property managers, service providers and infrastructure providers to gather necessary data for evaluations and maintain communication with TRAI to ensure compliance with regulatory standards.

v. **Continuous improvement**: Stay updated on technological advancements and regulatory changes to refine evaluation criteria and participate in training and workshops to enhance evaluation methodologies. Participate in training programs, workshops, and knowledge-sharing initiatives to enhance evaluation methodologies and improve accuracy in assessments.

vi. **Reporting**: Maintain comprehensive records of all evaluations conducted, ratings issued, and feedback provided to property managers for different properties. Submit periodic reports and trend analyses to TRAI, highlighting industry-wide connectivity performance, key challenges, and areas needing regulatory attention.

vii. **Compliance with Regulations**: All the DCRA activities shall be within the framework of the regulations and directions or orders or guidelines issued from time to time by the Authority.

2.2. Property Manager (PM)

As defined in the regulations, the **"Property Manager"** means the person who is either the owner of the property to be rated for digital connectivity or has any legal right to control or manage the property. The Property Manager plays a key role in facilitating digital connectivity assessments, coordinating with relevant authorities, and implementing improvements to enhance user experience and maintain compliance with regulatory standards.

Property Managers are responsible for overseeing the management and maintenance of properties, including ensuring adequate digital connectivity.

The responsibilities of Property Manager, under the regulations, *inter-alia*, include:

i. **Application for ratings**:
   a. Submit applications for digital connectivity ratings through the rating portal and provide accurate and comprehensive information about the property's digital connectivity.
   b. Provide accurate and comprehensive information regarding the property's existing digital connectivity infrastructure, including network coverage, fiber availability, and telecom service provider details.
   c. Ensure that all submitted data is up to date and reflects the actual service available on the property.

ii. **Documentation and compliance**:
   a. Prepare and upload the necessary documentation required for the evaluation process and ensure ongoing compliance with standards set by DCRAs and TRAI.
   b. Keep track of changes in compliance requirements and implement necessary updates to avoid penalties or service disruptions.

iii. **Maintenance of digital connectivity infrastructure**:

   a. Regularly inspect and maintain the digital connectivity infrastructure to ensure optimal performance and address any connectivity issues promptly to maintain service quality.
   b. Address connectivity issues proactively by working with telecom service providers and technical support teams.
   c. Ensure proper maintenance and upgrades of network equipment to optimize performance and provide a seamless digital experience for occupants and tenants.

iv. **Collaboration with DCRAs**:
   a. Facilitate the evaluation and rating process by providing Digital Connectivity Rating Agencies (DCRAs) with necessary access to the property.
   b. Work closely with evaluators to share technical data, network reports, and other relevant details needed for the rating assessment.
   c. Implement recommendations and best practices suggested by DCRAs to enhance the property's digital connectivity rating.

v. **Customer communication and tenant engagement**:
   a. Act as the primary point of contact for tenants and occupants regarding digital connectivity services within the property.

b. Address concerns or complaints related to network performance and ensure that users are informed about available connectivity solutions and upgrades.
Educate tenants on digital connectivity features available in the building and promote initiatives aimed at improving network access and reliability.

2.3. Telecom Service Providers (TSPs)

TSPs are entities responsible for delivering a wide range of telecommunications and digital services, including mobile and fixed-line communication, internet access, and broadband services. They serve as the backbone of digital connectivity, ensuring seamless and reliable communication for end-users. Their role is critical in maintaining and improving the overall quality of digital services, directly impacting the user experience and the effectiveness of digital infrastructure. The TSPs are encouraged to collaborate with the property managers and DCIPs for extending and maintenance of digital connectivity in the properties.

2.4. Digital Connectivity Infrastructure Providers (DCIPs)

Digital Connectivity Infrastructure Providers are entities that develop and maintain the digital infrastructure as per their authorization. This includes network equipment, cabling, and other technological frameworks.

Digital Connectivity Infrastructure Providers (DCIPs) are key enablers in the telecommunication and digital ecosystem, responsible for developing, deploying, and maintaining the physical and digital infrastructure that supports seamless digital connectivity services. Their role is vital in ensuring high-speed, reliable, and future-ready network infrastructure that caters to the growing demands of consumers, businesses, and service providers.

The responsibilities of DCIP are as follows:

i. **Infrastructure development**: Design, build, and maintain the digital communication infrastructure necessary for reliable connectivity and ensure that the infrastructure meets the technical specifications required for high-speed digital services.

ii. **Compliance with standards**: Ensure that all infrastructure complies with standards set by regulatory bodies and industry best practices and regularly update infrastructure to keep up with technological advancements and regulatory changes.

iii. **Maintenance and upgrades**: Conduct regular maintenance of infrastructure to ensure optimal performance, plan and execute upgrades to enhance capacity and meet evolving demands for digital services.

iv. **Customer collaboration**: Work closely with Telecom Service Providers to ensure that the infrastructure meets their service delivery needs and address any issues related to infrastructure that may impact service quality.

v. **Feedback mechanism**: Participate in feedback mechanisms to improve infrastructure quality based on ratings and assessments from DCRAs and implement necessary changes based on feedback to enhance the overall connectivity experience.

2.5. Consumers / End Users

The consumer or end-user is the primary stakeholder in the broader ecosystem for assessing and rating digital connectivity in properties or specific geographical areas. Their role is pivotal, as the quality and reliability of connectivity directly impact their daily digital interactions, productivity, and overall satisfaction.

The fundamental objective of implementing a rating system is to enhance the quality of service and thereby experience (QoE) for consumers by identifying gaps in connectivity and encouraging improvements in digital infrastructure. To achieve this, user feedback and real-world end-user experiences must be integral components of the rating framework, ensuring that assessments reflect actual usability.

The quality of user experience can be measured objectively through various technical key performance indicators (KPIs). These include parameters such as network latency, download and upload speeds, signal strength, coverage consistency, etc. These metrics collectively define the Quality of Experience (QoE) from a technical standpoint and provide quantifiable data to assess digital connectivity standards.

On the other hand, subjective evaluation of QoE involves gathering consumer perceptions through structured methods such as end-user surveys, real-time feedback mechanisms, and digital reporting platforms. This qualitative input helps capture aspects of user experience that may not be fully reflected in technical measurements, such as service reliability, ease of connectivity, and user satisfaction with network performance.

By combining both objective technical assessments and subjective user feedback, the rating framework can provide a holistic evaluation of digital connectivity in properties and areas, ultimately driving improvements that align with consumer expectations and technological advancements.

3. Registration Process and Rating Lifecycle

The rating lifecycle begins with the registration of the Digital Connectivity Rating Agency (DCRA) and property managers, ensuring adherence to established terms and conditions. Following this, properties are mapped to the categories provided in the regulations for the assessment process. The assessment phase involves a comprehensive review of the digital connectivity infrastructure and services in the properties against set benchmarks, verifying compliance with regulatory and operational standards. Only after completing the evaluation steps, the final rating is awarded providing a transparent and standardized measure of digital connectivity.

3.1. Eligibility Criteria of Digital Connectivity Rating Agency (DCRA) Registration

An entity shall be eligible for registration as a Digital Connectivity Rating Agency (DCRA) under regulation if it meets the criteria outlined in (Section III – "Registration of Digital Connectivity Rating Agency" of the Regulation on Rating of Properties for Digital Connectivity). The eligible entities may apply for registration as DCRA as per the guidelines issued by the Authority from time to time.

3.2. Registration Process of DCRA

The registration process for Digital Connectivity Rating Agencies (DCRA) is outlined under Section III – "Registration of Digital Connectivity Rating Agency" in the Regulation on Rating of Properties for Digital Connectivity,2024 as amended from time to time. The process ensures that only eligible and competent entities can participate in property rating activities. The registration process, as provided in the regulations, is summarized below.

i. Any entity fulfilling the eligibility criteria under regulation and intending to commence activity as DCRA under the regulations, shall make an application to the Authority for grant of registration on the rating platform in the manner and format, and upon payment of such fee, as may be specified by the Authority

ii. An application for registration, which is not complete in all respects or does not conform to the eligibility criteria specified under regulation or the instructions specified by the Authority from time to time, shall be rejected:

    Provided that before rejecting any such application, the applicant shall be given an opportunity to rectify the deficiency, if any, within thirty days from the date of receipt of communication from the Authority:

    Provided further that the Authority may, for sufficient reasons, extend the time for rectification of the deficiency by such time as it may be considered appropriate, but such extended time shall not exceed thirty days.

iii. The Authority may, if it so desires, ask the applicant to appear before it, in person, in connection with the grant of registration.

3.2.1 Grant of Registration and Listing on Rating Platform

The registration and listing process of DCRA on the rating platform is provided in regulation (6) as summarized below.

i. Eligible applicants meeting the eligibility criteria under regulation will be granted registration on the rating platform for a period of five years. However, the registration granted under sub-regulation shall be subject to payment of such fees and such terms and conditions, as may be specified by the Authority from time to time, by order or direction.

ii. The registration granted under sub-regulations shall be valid for the specified period unless it is suspended or cancelled by the Authority as per provisions of these regulations, or upon approval of the request of DCRA for withdrawal of its registration by the Authority.

iii. Such registration shall not confer any right upon the DCRA for assignment of work for rating of property.

iv. The Authority may, upon the request of DCRA and on being satisfied with its performance, subject to the DCRA meeting the eligibility criteria, renew the registration of DCRA for another five years.

v. However, in case of non-renewal of its registration by the Authority, DCRA shall continue to discharge its obligations under the regulations for the remaining validity period of its registration.

vi. If the applicant or DCRA submits information which is found to be false or misleading at any stage, either prior to the registration or during the validity of the registration, the Authority shall, without prejudice to its rights under any law, Act or regulations, reject the application for registration or cancel or suspend the registration of DCRA. However, no order for cancellation or suspension of registration shall be made by the Authority unless DCRA has been given a reasonable opportunity of representing against such cancellation or suspension by the Authority.

3.2.2 Conditions of Registration of DCRA

The registration of DCRA shall be subject to the conditions prescribed under (Section III – "Registration of Digital Connectivity Rating Agency" of the Regulation on Rating of Properties for Digital Connectivity).

3.3. General Obligations for DCRA

DCRA is required to follow a set of terms and conditions prescribed under Section – IV "General Obligations of DCRA" of "Regulation on Rating of Properties for Digital Connectivity". These terms ensure transparency, accountability, and compliance in the rating process and cover the following aspects.

i. Code of Conduct
ii. Disclosure of fees and other terms and conditions to the property manager:
iii. Evaluation and award of ratings
iv. Monitoring of ratings
v. Retention of records and audit of DCRA

3.4. Registration of Property Manager

The registration of a Property Manager on the rating platform is an important step in ensuring that only eligible and authorized individuals or entities can apply for property ratings related to digital connectivity. This process is governed by the regulation under Section V – General Obligations of Property Manager. The process for registration is summarized below.

i. Any property manager, who intends to apply for a rating of their property for digital connectivity under these regulations, shall register himself on the rating platform, in such manner and format and upon payment of such fees, as may be specified by the Authority.
ii. No property manager, who is not registered on the rating platform, shall be eligible to apply for the rating of property being used, controlled or managed by him, in accordance with the provisions of these regulations.
iii. If the property manager submits any false or misleading information, undertaking, declaration or documents under this regulation, it shall amount to the contravention of the provisions of the regulations and the authority may take action as per applicable laws, Act or regulations.
iv. The fees for rating of property shall be mutually decided by DCRA and the property manager as provided under regulation.

3.5. General Obligations for Property Manager

The general obligations of a Property Manager are provided in Section V – General Obligations of Property Manager. These obligations broadly covers the following aspects -

i. Facilitation and co-operation during rating process and inspection
ii. Compliance of terms and conditions of rating certificate
iii. Compliance to approved DCI design
iv. Repair and maintenance of DCI:
v. Renewal of ratings
vi. No exclusive arrangement with the service providers
vii. Fair use of ratings
viii. Change of property manager or ownership and continuity of DCI

3.6. Classification of Properties for Rating

The classification of properties for the purpose of rating is one of the key aspect of the regulations. It provides a structured framework to assess and categorize properties based on their digital connectivity and ensure a standardized rating system for different types of properties.

The classification considers property type, usage, digital infrastructure availability, and the expected connectivity demand to create a fair and transparent rating mechanism.

Below is the detailed classification of properties as provided in Section II of the regulation:

S. No.	Classification	Category or Group	Type of Property
1.	Residential	A	Apartments, independent houses, gated communities or societies, etc.

S. No.	Classification	Category or Group	Type of Property
2.	Government Properties	A	All properties of the Central Government, the State Government, Courts, Public Sector Undertakings, Local Bodies, Heritage Sites, etc.
3.	Commercial Establishments	A	Commercial office complex, shopping malls, industrial estates, SEZs, multi-modal logistic parks, convention centres, etc.
4.	Other private or public areas	B	Airport, Bus Station, Railway Station, Hospitals, Hotels, Educational Institutions, etc.
5.	Stadiums or Sport Arenas or spaces of frequent gathering	B	Stadiums or permanent spaces of gathering with seating capacity of more than 5000 persons
6.	Transport corridors	B	Expressways, Highways, Railways routes, etc.

Table 3.1: Classification of Properties for Rating of digital connectivity

Category A: includes properties that require consistent, high-quality connectivity for daily operations and business activities.

Category B: includes high-footfall areas and event spaces that require scalable connectivity solutions based on demand.

3.7. Rating Process

The rating process for digital connectivity in properties follows a structured, multi-stage evaluation approach to ensure transparency, consistency, and reliability in assessing a property's digital capabilities. This framework is designed to evaluate service quality, infrastructure readiness, and user experience, ultimately assigning a rating that reflects the property's ability to support digital connectivity efficiently. The following steps outline the rating lifecycle and role of DCRA and Property Manager.

i. **Online Registration by DCRA and Property Managers:** As already outlined in Section 3.2 and Section 3.4 of this manual, the interested DCRA and Property Managers need to register on the online rating platform. A one-time and non-refundable registration fee, as prescribed by the Authority, must be paid by the property manager at the time of registration. The registration enables Property Managers to apply for a rating assessment of their properties. The property manager may also apply for the rating of under construction properties to enable assessment and guidance by DCRA on implementation of DCI in line

with the provision. However, the rating certificate shall be issued after provisioning DCI as per the requirement of the regulation for rating criteria.

ii. **Submission of Documents:**

a. Property Managers seeking a new rating or renewal of an existing rating for the property shall submit an online application along with the prescribed supporting documents.

b. A document checklist, including for fully constructed and under construction properties, will be available in the Frequently Asked Questions (FAQ) section on the rating portal.

c. Once application for rating is submitted by the property manager, the system will generate a Unique Request Identification Number (URIN) for tracking the application status.

d. The Property Manager can select any of the registered DCRA from the list provided on the rating platform.

e. The details of the maximum chargeable fee (MCF), to be charged by different DCRAs, will be available on the portal.

f. Online application of the Property Manager will be automatically assigned to the Digital Connectivity Rating Agency (DCRA) selected during the submission of application for rating.

iii. **Due-Diligence Stage I:**

a. The selected DCRA shall conduct Stage I of due diligence to assess basic requirements for assessing the digital connectivity status of the property based on the submitted documents.

b. This stage of assessment must be completed in a time bound manner within 30 days from the date of assignment of the property to the DCRA.

c. If additional details or clarifications are required, the DCRA will notify the Property Manager to complete the application through the rating platform.

d. The Property Manager should provide relevant inputs to the DCRA within 7 days of the request by the DCRA failing which the delay will be attributed to the property manager and not to the DCRA.

e. All the requests and responses for seeking the inputs or clarifications shall be made through the rating platform.

f. The DCRA will visit the site, at suitable stage(s) of construction, in case the site is under development or construction to assess whether the DCI is in line with the approved design. The DCRA will provide its inputs to the property manager for construction of DCI aligned with requirements of rating criteria as far as possible.

iv. **Preliminary evaluation comments and action points:**

The DCRA shall share their comments with action items, if any, to the Property Manager concerned through the rating platform. The actions points shall be classified broadly in three categories i.e.,

a. **Mandatory** – These action points will only include the actions required by Property Manager without which the evaluation process cannot proceed to next stage.

b. **Recommended**: These action items will include those points which may affect the rating score and consequently the rating of the property. The Property Manager may choose to ignore these comments and may confirm proceeding for the next stage of evaluation.

c. **Optional:** This category of action items will include suggestive actions to be taken by the Property Manager which does not affect the score and rating of the property. However, such actions may further improve quality of service and consumer experience.

v. **Corrective action by property manager:**

a. In response to the action points arising out of 'Preliminary evaluation', the Property Manager shall take remedial actions on mandatory points to proceed for second stage of evaluation.

b. After all the 'Mandatory' action points are complied, the Property Manager can apply for second stage of evaluation i.e., Due-Diligence Stage-II. However, the property managers are encouraged to consider action on recommended and optional inputs from DCRA to get the best possible score for their property.

vi. **Due-Diligence Stage II:**

a. The request for initiation of Due Diligence stage -II shall commence upon the request of the property manager after the action has been completed on at least 'Mandatory' action points or preferable other recommended and optional points.

b. The Due Diligence stage - II will involve the process of onsite verification of digital connectivity and associated infrastructure by the DCRA against the prescribed rating criteria including as provided in supporting documents.

c. The detailed methodology for scoring against each criterion and sub-criteria and respective weightage are provided in Chapter-4 of this manual.

d. The Due Diligence Stage-II will be completed by the DCRA in a time-bound manner preferable within 60 days of submission of request by the Property Manager for Due Diligence-II evaluation.

e. The Due Diligence stage – II for under construction will commence on completion of DCI construction, testing and integration.

vii. **Final Evaluation by DCRA:**

a. After the completion of Due Diligence stage - II, the DCRA shall consolidate all the relevant details and prepare a comprehensive assessment report. The assessment report shall cover the list of all documents collected; the summary criteria and sub-criteria wise

comments, documents, score awarded, and list of test/evidence collected during the assessment.

b. The objective of each sub-criteria, methodology of assessment and scoring criteria against each criterion and sub-criteria are provided in **Chapter 4** for properties of category 'A'.

c. In the end, the assessment report will provide the score card for the property against each criteria and sub-criteria.

d. A copy of assessment report with URIN and property details shall be uploaded against respective property. The assessment report will be digitally signed by the authorized representative of the DCRA. This report will also be visible to the property manager concerned.

e. The DCRA shall also update the score against each criterion and sub-criteria on rating platform to generate the rating certificate.

viii. **Award of Rating:**

a. After the rating score is updated in the rating portal, the DCRA shall generate a rating certificate and sign it digitally.

b. The Property Manager will be able to download the rating certificate through their registered account on the rating portal against respective property till its validity.

c. Once the rating certificate is issued by DCRA, it will be available for the public to view or verify the rating certificates either through unique certificate number or QR code available on the certificate or other search and filter criteria as may be provided on the rating platform.

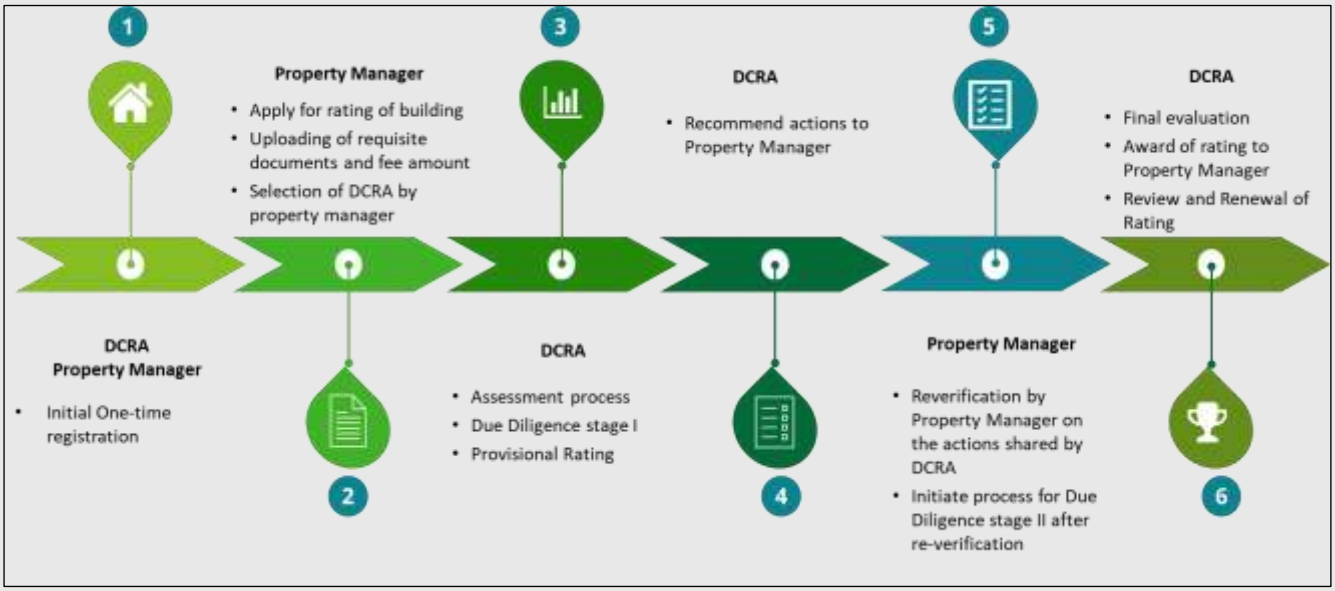

Figure 3.1: High Level Rating Workflow

4. Assessment Methodology for Category 'A' Properties

The regulation 24 under Section – VII "Rating criteria and process for evaluation of digital connectivity and award of ratings" of the Regulation which provides criteria, weightage and high-level sub-criteria against each main criterion for category 'A' properties as indicated in column [a], [b] and [c] respectively in Table 4.1. To enable uniform and objective assessment against each sub-criteria, the sub-criteria weightage shall be as provided in column [d]. The sub-criteria weightage has been arrived factoring their relative importance for assessment of digital connectivity and associated infrastructure.

Criteria No.	S. No. (as per regulation)	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
4.1	1	Compliance to applicable Model Building Bye Laws (MBBL) and National Building Code (NBC) for digital connectivity	5	4.1.1 Approved DCI design	2.5
				4.1.2 DCI implementation as per approved DCI design	2.5
4.2	2	Provision in civil infrastructure, over and above MBBL and NBC requirements, for ensuring robust digital connectivity	5	4.2.1 Provision for expansion of telecom rooms and cable pathways	2
				4.2.2 Provision for expansion of mobile and wireline connectivity	2
				4.2.3 Ease of access of DCI installed for repair or maintenance	1
4.3		Provision in power infrastructure, over and	5	4.3.1 Redundancy of power source	1
				4.3.2 UPS power backup for DCI	3

Criteria No.	S. No. (as per regulation)	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
	3	above MBBL or NBC requirements, for ensuring reliable digital connectivity		4.3.3 Power continuity monitoring	1
				4.3.4 Building Management System	1
4.4	4	Digital Connectivity Infrastructure Resilience	10	4.4.1 Availability of alternate entry paths for digital connectivity infrastructure	3
				4.4.2 Non-flooding measures for DCI installation	3
				4.4.3 Implementation of redundancy in power source and DCI paths	4
4.5	5	Future Readiness of Digital Connectivity Infrastructure	10	4.5.1 Availability of the latest generation of mobile connectivity	4
				4.5.2 Support for future bands	3
				4.5.3 Upgradability of wireline DCI	3
4.6	6	Provision of Wired Connectivity infrastructure	20	4.6.1 Backhaul fiber connectivity (service provider to property)	10
				4.6.2 Fiber connectivity till user premises	5
				4.6.3 Fiber connectivity in each room or office or commercial space	5

Criteria No.	S. No. (as per regulation)	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
4.7	7	Availability of Service Providers	15	4.7.1 Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure	7.5
				4.7.2 Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure	7.5
4.8	8	Service Performance	25	4.8.1 Mobile network coverage and performance in public areas of property	5
				4.8.2 Secure public Wi-Fi network coverage and performance in public areas of property	5
				4.8.3 Mobile network coverage and performance in non-public areas	5
				4.8.4 Secure public Wi-Fi network coverage and performance in non-public areas	5
				4.8.5 Average download speed of different wireline network(s) in respective highest speed plan	5
4.9	9	User Experience	5	4.9.1 User feedback on digital connectivity experience	5

Table 4.1: Weightage for different sub-criteria for category 'A' properties

The Digital Connectivity Rating Agency (DCRA) shall assess the digital connectivity and associated infrastructure as per provisions of the Regulations. The detailed assessment methodology against each sub-criterion is provided in the following sections. The DCRA shall scrupulously follow the assessment methodology and collect the artifacts, evidence or test results as prescribed against respective sub-criteria under each main criterion. These supporting documents shall be preserved by the DCRA or uploaded to the rating platform as per the requirement of the regulations and guidelines issued from time to time.

4.1. Compliance to Applicable Model Building Bye Laws (MBBL) and National Building Code (NBC) for Digital Connectivity (Weightage: 5)

This criterion evaluates whether a property adheres to the relevant provisions of Model Building Bye-Laws (MBBL) and the National Building Code (NBC) of India in terms of digital connectivity infrastructure. Compliance with these provisions ensures that properties are designed and constructed with structured telecom infrastructure, safety standards, and future-readiness for advanced digital services.

4.1.1. Sub-Criteria: Approved Digital Connectivity Infrastructure (DCI) design (Weightage – 2.5)

i. Objective: The primary goal of this sub-criterion is to evaluate whether the digital connectivity infrastructure (DCI) for a property has been planned and approved in compliance with the applicable Model Building Bye-Laws (MBBL) and National Building Code (NBC) regulations. Ensuring adherence to these standards is crucial for:

a. Establishing a strong foundation for seamless digital connectivity.
b. Future-proofing readiness of the property by integrating provisions for advanced communication technologies.
c. Enhancing digital accessibility and reliability for residents, businesses, and service providers.

ii. Assessment Methodology

The assessment of the approved DCI design will be conducted based on document verification, compliance checks, and certification validation. The key evaluation steps are:

a. **Availability of Approved DCI or ICT Infrastructure Design Documents:**
   1. Confirm whether the property manager has obtained formal approval for the DCI blueprint.
   2. Evaluate that the design considers all necessary elements of DCI as per applicable bye-laws or NBC.

b. **Supporting documents:**
   1. The architectural drawings for digital connectivity or ICT infrastructure
   2. The documents should be duly stamped and certified by the competent authority.

c. **Document Review:**
   1. Verify whether the submitted design aligns with the relevant sections of MBBL and NBC.
   2. Evaluate if the design accommodates evolving digital connectivity needs, such as provisions for horizontal and vertical pathways, entry points, telecom rooms, HVAC (Heat ventilation air conditioning) in telecom room etc. as per NBC.

iii. Compliance checklist: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Deviation from MBBL or NBC (Yes/No)	Type of deviations (if any)	Record maintenance requirement (Upload/ DCRA level)
1.	Approved DCI design documents by competent authority			Record and Upload
2.	Design compliance with MBBL and NBC standards			Record
3.	Design drawings certified by competent authority			Record

Table 4.2: Compliance checklist

iv. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	2.5	On compliance to MBBL and NBC
2.	2	If there is minor deviation in design from MBBL or NBC. Minor deviations shall be those deviations which do not impact future readiness and provision of digital connectivity
3.	1	If there is any major deviation in design from MBBL or NBC. Major deviation shall be those deviations in the design which are likely to impact future readiness and provisioning of digital connectivity

Table 4.3: Scoring criteria

Note:

(i) In case MBBL is not notified by the concerned State/UT, the provisions of MBBL issued by Ministry of Housing and Urban Affairs (MoHUA) shall apply for assessment against this criterion.

(ii) The DCRA shall record the explicit deviations, if any, in its assessment report.

4.1.2. Sub-Criteria: DCI implementation as per approved DCI design (Weightage – 2.5)

i. **Objective:** The purpose of this assessment is to ensure that the Digital Connectivity Infrastructure (DCI) at the property site has been implemented in strict accordance with the approved DCI design. This verification is carried out in compliance with the Model Building Bye-Laws (MBBL) and National Building Code (NBC) requirements to ensure standardization, quality, and maintainability of digital infrastructure deployment.

ii. **Assessment Methodology**

The assessment process is divided into three key components: Physical Inspection, Supporting Documents, and Documentation Review to ensure a thorough assessment.

a. **Physical Inspection**

1. During physical verification, the DCRA shall verify the availability of DCI as per the approved design under sub-criteria 4.1.1.
2. The compliance and deviations, if any, shall be specifically recorded with supporting evidence.

b. **Supporting documents**

1. Photographs of installed key DCI infrastructure
2. Site inspection reports for DCI with design vs implementation comparisons
3. Testing and Commissioning certificates for DCI as applicable

c. **Documentation Review**

1. Verify the as-build documents and confirm it is as per the approved design.
2. Validate the veracity of as-build DCI implementation with testing and commissioning certificates for different DCI components.
3. Record observations in the onsite visit report.

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Deviation from MBBL or NBC (Yes/No)	Type of deviations (if any)	Record maintenance requirement (Upload/ DCRA level)
1.	As-build DCI is as per approved design			Record and upload
2.	Photographs of DCI			Record and upload

S. No.	Item description	Deviation from MBBL or NBC (Yes/No)	Type of deviations (if any)	Record maintenance requirement (Upload/ DCRA level)
3.	Site inspection reports for DCI with design comparisons			Record
4.	Testing and Commissioning certificates for DCI as applicable			Record

Table 4.4: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	2.5	On compliance with the implementation of DCI or ICT infrastructure
2.	2	If there is minor deviation in implementation of DCI or ICT infrastructure. Minor deviations shall be those deviations which do not impact future readiness and provision of digital connectivity.
3.	0.5	If there is any major deviation in implementation of DCI or ICT infrastructure. Major deviation shall be those deviations in the design which are likely to impact future readiness and provisioning of digital connectivity.

Table 4.5: Scoring criteria

4.2. Provision in Civil Infrastructure, over and above MBBL and NBC requirements, for Ensuring Robust Digital Connectivity (Weightage: 5)

This criterion evaluates the extent to which a property goes beyond the mandatory requirements set by the Model Building Bye-Laws (MBBL) and National Building Code (NBC) to enhance its digital connectivity infrastructure.

4.2.1. Sub-Criteria: Provision for expansion of telecom rooms and cable pathways (Weightage - 2)

i. **Objective:** To access the civil infrastructure provisions, over and above MBBL or NBC requirements, for supporting DCI maintenance and future upgradation. Such provisions may include the capacity for expanding telecom rooms, cable pathways, ducts etc. to support increasing telecom and digital infrastructure needs over time.

ii. **Assessment Methodology**

a. **Site Inspection:** The Digital Connectivity Rating Agency (DCRA) will conduct physical inspections to assess:

1. The availability and scalability of such civil infrastructure beyond the requirement of NBC.
2. Upgradability and maintainability of DCI to support future digital infrastructure needs. Here maintainability shall mean the ease of installation, repair and replacement of digital connectivity infrastructure by the property manager of the service provider, as applicable.

b. **Supporting documents:** The DCRA will review building layout plans to verify:
   1. The allocation of space for telecom rooms, ducts, and cable pathways.
   2. Whether these provisions exceed the standard requirements of NBC or MBBL.

c. **Documentation Review**

1. Validate the building layout plans and mark the specific civil infrastructure considered as being provisioned beyond requirements of NBC or MBBL.
2. Prepare or review the assessment report (if already available with property manager) on upgradability and maintainability of the civil infrastructure to support future digital infrastructure needs.

iii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Building layout plans for DCI or ICT infrastructure duly marked and signed by DCRA and property manager		Record and upload
2.	Expansion feasibility reports – DCI or ICT infrastructure pathways and telecom rooms		Record

Table 4.6: Compliance checklist

iv. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	2	If key civil infrastructure like telecom rooms, ducts for alternate telecom cable entry points, horizontal and vertical pathways etc. is upgradable and maintainable to support future digital infrastructure needs of fixed and wireless service providers

2.	1.5	If there are minor bottlenecks in above referred civil infrastructure. Minor bottlenecks shall be those which do not impact future upgradability of digital connectivity.
3.	0.5	If there is any major bottleneck in future upgradability of telecom infrastructure.

Table 4.7: Scoring criteria

4.2.2. Sub-Criteria: Provision for expansion of mobile and wireline connectivity (Weightage – 2)

i. **Objective:** To access availability of civil infrastructure like DCI space, pathways, and provisions to allow for the expansion of both mobile (e.g., 5G/6G) and wireline connectivity (e.g., fiber-optic cables, Television, camera etc.) inside the property as technology evolves.

ii. **Assessment Methodology**

a. **Physical Verification of Expansion Conduits**

1. Inspect the telecom room, ducts, risers, and pathways to assess if sufficient space is available for future mobile and wireline deployments.
2. Inspect the space earmarked for installation of mobile base station(s), distributed antenna system, Wi-Fi infrastructure, Direct to Home (DTH) system etc. to extend coverage inside the property including lifts and basements.

b. **Technology Readiness:** Evaluate whether the current civil infrastructure design supports emerging technologies such as 5G, Internet of Things (IoT, Machine to Machine Communication (M2M) and high-capacity fiber networks.

c. **Supporting Documents**

1. Layout diagrams for existing civil infrastructure for DCI
2. Layout indicating provisions for future expansion

d. **Documentation Review:** Verify the updated network diagrams and future expansion plans during the physical verification and site inspection.

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Updated network diagrams		Record

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
2.	Future expansion plans		Record

Table 4.8: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	2	If civil infrastructure or space provision and pathways are available and space is earmarked to support installation of mobile base station(s) or distributed antenna system (DAS) or Wi-Fi infrastructure and Direct to Home (DTH) system etc.
2.	1.5	If space provision and pathways exist for at least Mobile base station or DAS
3.	1	If space provision and pathways exist for at least Wi-Fi system installation

Table 4.9: Scoring criteria

4.2.3. Sub-Criteria: Ease of access of DCI installed for repair or maintenance (Weightage – 1)

i. **Objective:** Properly planned access areas for DCI are essential to ensure ease of maintenance and repair of digital connectivity infrastructure. This reduces downtime and service interruptions. These sub-criteria intend to evaluate the ease of maintenance of DCI which is supported by the provisioned civil infrastructure. The equipment, cables, pathways, ducts should be easily accessible for smooth repair and maintenance of DCI by respective service providers.

ii. **Assessment Methodology**

a. **Physical Accessibility:** Conduct on-site assessments to check the physical accessibility of pathways, telecom rooms, cable ducts and equipment points.

b. **Labeling and Marking Verification:** Verify all DCI equipment, pathways, cable ducts etc. are clearly labeled and marked.

c. **Supporting documents**
   1. Site photos showing maintenance pathways
   2. As-build documentation

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance

summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Site photos showing maintenance pathways		Record
2.	Maintenance checklists		Record

Table 4.10: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	1	If physical accessibility and labelling of pathways, telecom rooms, cable ducts and equipment is available for DCI.

Table 4.11: Scoring criteria

4.3. Provision in Power Infrastructure, over and above MBBL or NBC requirements, for Ensuring Reliable Digital Connectivity (Weightage: 5)

This criterion evaluates additional provisions in power infrastructure that go beyond the Model Building Bye-Laws (MBBL) and National Building Code (NBC) to ensure uninterrupted and reliable power supply for digital connectivity.

4.3.1. Sub-Criteria: Redundancy of power source (Weightage: 1)

i. **Objective:** The redundant power sources are essential for reliable operation of digital connectivity. Under this sub-criterion, the availability of redundancy in power sources is assessed to ensure that DCI remain operational even during power failures. This redundancy may include backup generators or alternative power systems.

ii. **Assessment Methodology**

a. **Verification of actual peak load and available capacity of redundant power source**
   1. Verify the availability of redundant power source for DCI.
   2. Verify whether all key DCI and systems are on redundant power source like alternate feeder or separate power generator.

b. **Power Source Switching Tests:** Check the functionality of the automatic switchover mechanism between primary and backup power sources on a sample basis.

c. **Supporting documents**
   1. Power layout diagrams
   2. DCI load switchover test report

d. **Documentation Review:** Verify the power layout diagrams, load test reports submitted by the property manager.

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Power layout diagrams		Record
2.	Load switchover testing reports		Record

Table 4.12: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	1	If all digital connectivity service affecting load is on redundant power source
2.	0.5	If any of the digital connectivity service affecting load is not on redundant power source

Table 4.13: Scoring criteria

4.3.2. Sub-Criteria: UPS power backup for DCI (Weightage – 3)

i. **Objective:** The continuity of power supply is essential for uninterrupted digital connectivity and Uninterrupted Power Supply (UPS) systems play an important role in service availability for any telecom or information and communication technology system. This sub-criterion will assess the availability and robustness of power backup system in case of failure of input sources i.e. commercial power and generator supply.

ii. **Assessment Methodology**

a. UPS backup verification for DCI

1. Check from the line diagram whether all DCI systems are provided with UPS backup.
2. Verify the DCI system rated load and correspond UPS power capacity provided for DCI from commissioning reports or other authentic documents to calculate the provisioned UPS backup time.
3. Check the availability of UPS system redundancy by way of load sharing among multiple UPS if applicable.
4. Sample test the UPS system's ability to provide uninterrupted power to the DCI by simulating input power failure.

b. Supporting documents

1. Electrical system line diagram for key DCI elements including redundant input sources and UPS system(s).

2. Test reports of UPS power backup time or other supporting document(s) with full DCI load and other load if any.

iii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Electrical system line diagram including redundant input sources and UPS system(s)		Record
2.	Whether all key DCI systems affecting service availability are on UPS?		Record
3.	Whether UPS system has redundancy?		Record
4.	UPS switch over successfully tested during sample testing?		Record
5.	Whether duration of UPS backup matches with available test reports with full DCI load?		Record

Table 4.14: Compliance checklist

iv. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	3	UPS power backup for key DCI components > 3 Hrs.
2.	2	UPS power backup for key DCI components > 1 Hrs.
3.	1	UPS power backup for key DCI components >0.5 Hrs.

Table 4.15: Scoring criteria

4.3.3. Sub-Criteria: Power continuity monitoring (Weightage – 1)

i. Objective: The power supply monitoring system plays an important role in ensuring the power supply continuity to DCI. If the health of power systems like generator or UPS or switch gear systems is not monitored on a continuous basis, it may result in major interruption when input commercial power supply fails. Therefore, this sub-criterion provides special emphasis on the implementation of monitoring system in the property for power services.

ii. Assessment Methodology

a. **Verification of Monitoring Dashboards:** Verify availability of dashboards or interfaces showing real-time power status, health status of UPS, generator(s), alerts, and reports/alerts in case of power failures.

b. **Validation of Automated Alerts:** Test alert mechanisms for their ability to notify maintenance team of power anomalies in real time.

c. **Supporting documents:** Monitoring system screenshots with alerts generated during testing.

iii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Monitoring system high level diagram		Record and Upload
2.	Capture monitoring system dashboard screenshot		Record and Upload
3.	Monitoring system diagram		Record and Upload

Table 4.16: Compliance checklist

iv. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	1	The dashboard covers end-to-end health status monitoring of all power systems
2.	0.5	The dashboard covers end to end health status monitoring of key power systems which may affect DCI availability

Table 4.17: Scoring criteria

4.3.4. Sub-Criteria: Building Management System (Weightage – 1)

i. Objective: While power monitoring system manages power related installations, building management system (BMS) encompasses monitoring of major building services like fire alarms, access control, Heating, Ventilation Air conditioning (HVAC), power systems etc. These facilities may affect the performance and availability of DCI and digital connectivity services. Thus, availability of BMS in the property enhances the DCI service availability and continuity. Therefore, this sub-criterion has been incorporated as a part of assessment for an enabling system for digital connectivity services.

ii. Assessment Methodology

a. **Real-Time Data Integration Tests:** Verify that the DCI power, fire alarms and HVAC management system is integrated with the BMS to provide centralized control and monitoring for DCI systems.

b. **BMS communication and notification validation:** Validate that the BMS receives accurate input data from related sensors or actuators and disseminates to the operations team in configured timelines.

c. **Supporting documents**
   1. BMS system high level diagram for DCI system areas of the property.

d. **Documentation Review**
   1. Verify the BMS screenshots against system diagrams.

iii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	BMS system architecture diagrams		Record
2.	Test report on DCI power systems, fire alarms and HVAC integration with BMS		Record
3.	Sample test report on detection and notification of main power supply failure and takeover by generator/UPS for DCI		Record

Table 4.18: Compliance checklist

iv. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	1	On availability of BMS integration covering power, fire alarm and HVAC for telecom room(s) in the property
2.	0.5	On availability of BMS integration covering at least two out of power, fire alarm and HVAC for telecom room(s) in the property

Table 4.19: Scoring criteria

4.4. Digital Connectivity Infrastructure Resilience (Weightage: 10)

Digital connectivity infrastructure (DCI) resilience is a critical factor in ensuring uninterrupted and high-quality digital connectivity for properties. Resilience refers to the ability of the infrastructure to withstand disruptions, minimize downtime, and provide redundancy in case of failures or network congestion.

4.4.1. Sub-Criteria: Availability of alternate entry paths for digital connectivity infrastructure (Weightage – 3)

i. Objective: To access the availability of alternate external entry paths in the property. The alternate entry paths enable the service providers to extend digital connectivity with route diversity which reduces the service disruptions in case of fault in one segment of the network ring including any damage within the property. The availability of route diversity up to the telecom rooms is an ideal scenario.

ii. Assessment Methodology

a. **Physical verification as per design documents**
   1. Examine on-site layouts for ducts from the entry points and cable pathways to confirm the availability of alternate entry paths for DCI in the property.
   2. Sufficient capacity for multiple service providers.

b. **Supporting documents:** Ducts and pathway layout diagrams to verify the availability on site.

iii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Ducts layout diagrams from different external entry points for fiber/ DCI		Record
2.	Pathway layout diagrams from ducts to telecom room(s) for fiber/ DCI		Record

Table 4.20: Compliance checklist

iv. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	3	Availability of alternate duct from property entry point and cable pathway routes till telecom room(s)
2.	2	Availability of alternate duct from property entry point
3.	1	Availability of alternate cable pathway routes from common location in property till telecom room(s)

Table 4.21: Scoring criteria

4.4.2. Sub-Criteria: Non-flooding measures for DCI installation (Weightage – 3)

i. Objective: Flooding can cause significant damage to digital connectivity infrastructure and disruption in digital connectivity. Measures like raised installations, waterproof enclosures, and drainage systems may prevent flooding of key DCI elements. This sub-criterion intends to access the implementation of non-flooding measures in the property to protect the DCI.

ii. Assessment Methodology

a. **Site Inspection**
   1. Check with the site layout and actual location of telecom rooms if they are located on higher floors, away from potential flooding zones like basements or ground floors.
   2. Verify that power equipment like generator set, UPS, switch over panels are installed on raised platforms or locations which are less susceptible to flooding.
   3. Verify that no water drain system is connected to the DCI rooms which can cause backflow.

b. **Drainage System Review:** Check the availability of drainage systems with functional checks to prevent backflow of floodwaters.

c. **Supporting documents**
   1. Design and layout documentation to review infrastructure layouts to verify that flood prevention measures align with best practices.
   2. Sample photographic evidence for key DCI system as proof of implementation.

iii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Whether DCI/telecom room(s) are above ground floor as per design and implementation?		Record
2.	Whether key power systems like UPS/ Generators for DCI are installed on ground or higher floor with non-flooding consideration?		Record
3.	Whether drainage system is implemented as per design layout?		Record

Table 4.22: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	3	Telecom/DCI room(s) and UPS are above ground floor and generators/ switching panels are installed with non-flooding considerations
2.	2	Only DCI is implemented above ground floor and backup power system (UPS) is implemented with non-flooding measure
3.	1	If DCI and generator system is implemented with non-flooding consideration

Table 4.23: Scoring criteria

4.4.3. Sub-Criteria: Implementation of redundancy in power source and DCI paths (Weightage – 4)

i. **Objective:** The redundant pathways for power and fiber cables inside the property provide path diversity in extending digital connectivity within and across the floor or building blocks. Redundancy should be applied to both the power supply and the connectivity pathways for ensuring that the DCI through other path can take over without impacting digital connectivity.

ii. **Assessment Methodology**

a. **Redundancy Verification**
   1. Review the DCI for the presence of at least two independent power sources (e.g., main power grid and backup generators or UPS).
   2. Examine the availability of path diversity for fiber or other cables across the building blocks, basements and towers from digital connectivity infrastructure room(s).
   3. Verify that digital connectivity till key aggregation points is supported by a minimum of two physically separated paths.

b. **Supporting documents**
   1. Power and cable layout for DCI indicating path redundancy.
   2. Sample test reports demonstrate that actual redundancy performance has been tested during commissioning.

c. **Documentation Review**
   1. Verify power and cable layout diagram for DCI indicating path redundancy with actual implementation.
   2. Validate test reports to confirm that redundancy mechanisms function as intended.

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Whether DCI is supported with redundant power sources (Generator/UPS)?		Record
2.	Whether power system network layout for DCI is implemented with path diversity?		Record
3.	Whether sample test reports demonstrate testing of redundancy?		Record
4.	Whether path diversity for fiber and other cables (DTH/ethernet as applicable) across the building blocks, basements and towers from digital connectivity infrastructure room(s) is implemented?		Record

Table 4.24: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	4	If power redundant paths are implemented for power and fiber path in the property
2.	2	If either power system to DCI or fiber paths are implemented with path diversity

Table 4.25: Scoring criteria

4.5. Future Readiness of Digital Connectivity Infrastructure (Weightage: 10)

Future readiness in digital connectivity infrastructure ensures that properties are equipped to support next-generation telecom technologies, evolving connectivity needs and increasing data demands. Future-ready property may be considered to have been designed to adapt, scale, and integrate upcoming innovations in digital connectivity, enabling seamless adoption of emerging technologies like 5G, advanced Wi-Fi and smart building solutions.

4.5.1. Sub-Criteria: Availability of the latest generation of mobile connectivity (Weightage – 4)

i. **Objective:** The infrastructure should be equipped to support the latest generation of mobile connectivity, such as 4G/5G and future network standards, to ensure high-speed, low-latency, and reliable communication. The availability of advanced mobile infrastructure significantly impacts digital connectivity performance and user experience. This sub-criterion focuses on assessing whether a property has the necessary infrastructure to support current and next-generation mobile networks and is future-ready for upcoming technologies.

ii. **Assessment Methodology**

a. **Inspection of latest technology installed Infrastructure**

1. **Physical Verification**: Inspect the property's mobile network infrastructure, providing coverage to the property including distributed antenna systems (DAS), and fiber backhaul connectivity.

2. **Technology Support**: Evaluate if the installed infrastructure is sufficient to provide coverage in the different areas of the property.

b. **Technical Validation**

1. Cross-check compatibility with current frequency bands with different service providers for latest/current technology.

c. **Supporting documents**

1. List of the latest generation mobile connectivity equipment's installed in the property.
2. Photographs of installed latest generation mobile connectivity equipment

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Whether the equipment installed supports the latest generation of mobile connectivity?		Record
2.	Photographs of installed latest generation mobile connectivity equipment		Record

Table 4.26: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement

1.	4	If equipment like DAS, RRU, Base Station, etc. supporting 5G technology are installed in the property for mobile connectivity
2.	2	If equipment like DAS, RRU, Base Station, etc. supporting 4G technology are installed in the property for mobile connectivity

Table 4.27: Scoring criteria

4.5.2. Sub-Criteria: Support for future bands (Weightage: 3)

i. Objective: To ensure long-term relevance and adaptability, digital connectivity infrastructure must be designed to support the integration of future wireless communication bands and evolving wired and mobile technologies. The rapid evolution of telecommunications standards, frequency bands, and network technologies necessitates a future-proof approach to infrastructure planning. This enables seamless upgrades, minimizes costly retrofitting, and ensures properties remain technologically competitive for years to come.

ii. Assessment Methodology

a. Validate the support or upgradability of installed Digital Connectivity Infrastructure (DCI) for future bands for latest technology.

b. Verify RF infrastructure installed like radio units, baseband units, duplexers, combiners and transmitters, as applicable, are capable for supporting upcoming technologies and frequency bands.

c. **Supporting documents**
   1. Bill of Material (BoM) installed at the property and datasheets for relevant equipment.

iii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Bill of Material (BoM) installed at building along with datasheets for relevant equipment		Record
2.	Whether DCI supports future bands for mobile or Wi-Fi network as applicable as per datasheets?		Record

Table 4.28: Compliance checklist

iv. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the

following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	3	If installed infrastructure supports future bands for 4G and 5G technology and/or Wi-Fi network as per the extant frequency roadmap of DoT.
2.	2	If installed infrastructure supports future bands for 4G technology and/or Wi-Fi network as per the extant frequency roadmap of DoT.
3.	1	If installed infrastructure supports future bands for 4G technology or Wi-Fi network as per the extant frequency roadmap of DoT.

Table 4.29: Scoring criteria

4.5.3. Sub-Criteria: Upgradability of wireline DCI (Weightage – 3)

i. **Objective:** Wireline digital connectivity infrastructure (DCI), such as fiber-optic networks, plays a crucial role in ensuring high-speed internet access and seamless communication. As technology evolves, infrastructure must be designed to accommodate future upgrades, such as higher bandwidth capacities, new transmission standards, and enhanced network architectures. This sub-criterion evaluates whether the existing fiber-optic network can be scaled or upgraded without requiring extensive rework.

ii. **Assessment Methodology**

a. **Existing bandwidth verification**

1. Assess the current fiber-optic network's bandwidth capabilities to determine if it supports high-speed data transfer (e.g., 1 Gbps, 10 Gbps, or higher).

2. Evaluate the type of fiber used and whether it can support technologies such as Dense Wavelength Division Multiplexing (DWDM) or Passive Optical Networks (PON).

b. **Scalability review**

1. Inspect the physical infrastructure, including cable pathways, ducts, and fiber termination points, to verify if additional fiber cables can be added in the future without major structural modifications.

2. Check the fiber distribution frames to assess whether they allow easy upgrades or expansions.

3. Determine whether there is spare capacity in existing ducts and conduits to accommodate additional fiber strands if needed.

c. **Supporting documents**

1. Documents to demonstrate upgradability of wireline DCI.

2. Photographic evidence of installed wireline DCI to document their capacity for future expansion.

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Upgradability of existing wireline DCI equipment's (switches/routers/splitters/PON etc.) and relevant cables		Record
2.	Whether the bandwidth supported through optical fiber with speed 1 Gbps or higher?		Record

Table 4.30: Compliance checklist

iv. **Scoring criteria**: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	3	If existing wireline infrastructure is on fiber and support 1 Gbps to end users
2.	2	If existing wireline infrastructure is on fiber and supports 500 Mbps to end user
3.	1	If existing wireline infrastructure is on fiber and support 100 Mbps to end user

Table 4.31: Scoring criteria

4.6. Provision of Wired Connectivity Infrastructure (Weightage: 20)

This criterion evaluates the availability, quality, and scalability of the wired connectivity infrastructure within a property.

A robust wired network ensures high-speed, reliable, and low-latency digital connectivity, supporting various applications such as business operations, smart building technologies and residential broadband needs as per property use.

4.6.1. Sub-Criteria: Backhaul fiber connectivity (service provider to property) (Weightage – 10)

i. **Objective:** A high-capacity fiber optic backhaul connection is essential to ensure high-speed and uninterrupted digital connectivity for users within the property. The presence of a dedicated fiber connection from the service provider to the property enhances network performance, reduces latency, and supports high-bandwidth applications such as video conferencing, cloud computing, and smart building management systems.

ii. **Assessment Methodology**

a. **Fiber availability check**

1. Conduct a physical verification of the fiber optic backhaul infrastructure connected to the service provider's network.

2. Check redundancy measures, such as dual entry fiber paths, in place for uninterrupted fiber connectivity in case of failure.

b. **Bandwidth verification**

1. Measure and validate the actual peak and average bandwidth available in the property from all service providers on aggregate level.

2. In the case of business, office or commercial property, check availability of leased line support on fiber.

c. **Supporting documents**

Fiber cable details form service providers to the property and supporting documents regarding available bandwidth from each service provider on fiber.

d. **Documentation Review:** Validate the Telecom/Internet service provider agreements and fiber/ bandwidth testing results.

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Fiber testing results		Record
2.	Photographs of fiber termination point at main telecom room		Record and Upload

Table 4.32: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Criteria
1.	10	Weightage awarded= 10* (No. of wireline service providers having fibre backhaul) / (No. of wireline service providers present in the property) (If number of wireline service providers in property are >=3) **Note**: In the case of wireline service providers there are less than three, the above formula will apply considering 50% weightage (i.e. 5 in place of 10) against this parameter

Table 4.33: Scoring criteria

4.6.2. Sub-Criteria: Fiber connectivity till user premises (Weightage – 5)

i. **Objective:** Sub-criterion assesses whether high-capacity fiber-optic infrastructure is extends up to the end-users within a property. The aim is to ensure that residents, businesses, and offices benefit from high-speed, reliable internet connectivity. A fiber-optic connection reaching the user premises guarantees superior bandwidth, lower latency, and future-proof infrastructure capable of supporting evolving digital requirements such as 5G backhaul, cloud services, and smart building applications. The well planned and laid fiber cables from telecom room(s) to the user premises (flat/home/office/shop etc. as applicable) enables faster provisioning and easy to maintain.

ii. **Assessment Methodology**

a. **Physical Inspection:** Verify that fiber-optic cabling extends up to each residential, office, or commercial unit within the property.

b. **Supporting documents**
   1. Fiber network architecture showing fiber distribution from the telecom/ room or meeting point to each unit.
   2. Fiber test reports confirming connectivity to each unit

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Fiber layout diagrams up to user premises		Record and Upload

2.	Sample fiber test reports confirming connectivity to each user premise		Record and Upload

Table 4.34: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	5	If fiber connectivity is extended to all user units within the property
2.	3	If fiber connectivity is extended to a minimum of 50% of user units within the property
3.	1	If fiber connectivity is extended to a minimum of 30% of user units within the property

Table 4.35: Scoring criteria

4.6.3. Sub-Criteria: Fiber connectivity in each room or office or commercial space (Weightage – 5)

i. **Objective:** The goal of this sub-criterion is to assess whether every individual space within the property, whether a residential unit, office, or commercial establishment—has fiber connectivity. This guarantees seamless high-speed internet access across the entire property, eliminating connectivity dead zones and ensuring a uniform digital experience for all occupants.

ii. **Assessment Methodology**

a. **Visual Inspection:** Inspect rooms, offices, or commercial spaces on a sample basis to confirm the presence of fiber-optic connectivity infrastructure and termination points in each room/office.

b. **Supporting documents**
   1. Network layout diagram for user units showing fiber terminations and sample test reports for fiber terminations
   2. Site survey reports and photographic evidence

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Network layout diagram for user units showing fiber terminations		Record
2.	Sample test reports for fiber terminations testing		Record and Upload

Table 4.36: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	5	If fiber connectivity is extended in each room/office/commercial space of all user units within the property
2.	3	If fiber connectivity is extended in each room/office/commercial space of minimum 50% of user units within the property
3.	1	If fiber connectivity is extended in each room/office/commercial space of minimum 30% of user units within the property

Table 4.37: Scoring criteria

4.7. Availability of Service Providers (Weightage: 15)

This criterion evaluates the number and diversity of wireline and mobile service providers that have integrated their services with the Digital Connectivity Infrastructure (DCI) of a property. A higher number of available providers ensure better service quality, redundancy and consumer choice.

4.7.1. Sub-Criteria: Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure (Weightage: 7.5)

i. **Objective:** The presence of multiple wireline Internet Service Providers (ISPs) within a property significantly enhances competition, service quality, redundancy, and network resilience, ensuring reliable and high-speed digital connectivity. A multi-ISP infrastructure benefits property managers, businesses, and residents by providing greater flexibility, improved service continuity, and optimized cost structures.

v. **Assessment Methodology**

a. **Verification of ISP Integration:** Confirm the number of wireline TSP/ISPs integrated with the DCI by inspecting the infrastructure and service availability.

b. **Telecom/Internet Service Provider Agreement Review:** Verify agreements with TSP/ISPs and sample integration test reports.

c. **Validation:** Verify that all integrated TSP/ISPs are operational.

d. **Supporting documents**

1. Telecom/ Internet Service Provider (TSP/ISP) Agreements
2. Network integration certificates/test reports
3. Service subscription status

ii. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Telecom/Internet Service Provider (ISP) Agreements		Record
2.	Network integration certificates/test reports		Record
3.	Service subscription status		Record

Table 4.38: Compliance checklist

iii. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	7.5	If 3 or more internet service providers have integration with DCI in the property with active service subscription
2.	5	If a minimum of 2 internet service providers have integration with DCI in the property with active service subscription
3.	2	If at least one internet service provider has integration with DCI in the property with active service subscription

Table 4.39: Scoring criteria

4.7.2. Sub-Criteria: Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure (Weightage – 7.5)

i. **Objective:** The objective of this sub-criterion is to assess the extent to which multiple mobile service providers (TSPs) are integrated with the property's digital connectivity infrastructure (DCI) or have adequate service coverage as per sub-criteria 8.1. Having multiple mobile service providers ensures users have reliable network coverage, high-quality service, and reduced congestion, particularly in high-density areas like commercial buildings, residential complexes, and office spaces.

ii. **Assessment Methodology**

a. **Coverage Verification**
   1. Confirm the number of Telecom Service Providers (TSPs) providing indoor coverage for the building.
   2. Validate integration of the DCI with In-Building Solutions (IBS)/Small Cells/ Wi-Fi offload for enhanced indoor mobile coverage.

b. **Supporting documents**
   1. Agreements signed with Telecom Service Providers
   2. RF coverage map in the property or walk/drive test results

c. **Documentation Review:** Validate the TSP agreements and network integration test reports.

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	RF coverage map in the property or walk/drive test results		Record and Upload
2.	Network performance test results from multiple operators		Record
3.	Agreements signed with Telecom Service Providers (without commercial details)		Record

Table 4.40: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	7.5	If 3 or more mobile service providers have integration with DCI in the property or more 75% coverage in indoor area of the property
2.	5	If at least two mobile service providers have integration with DCI in the property or more 75% coverage in indoor areas
3.	2	If at least one mobile service provider has integration with DCI in the property or more 75% coverage in indoor areas

Table 4.41: Scoring criteria

4.8. Service Performance (Weightage: 25)

Service performance is a critical factor in evaluating the digital connectivity of a property. This criterion assesses service performance parameters to assess digital experience in the property. For assessment of mobile service coverage, the reference minimum signal strength for 2G/4G/5G technology shall be same as prescribed by TRAI for publishing of coverage map under revised QoS regulation i.e. *'THE STANDARDS OF QUALITY OF SERVICE OF ACCESS (WIRELINE AND WIRELESS) AND BROADBAND (WIRELINE AND WIRELESS) SERVICE REGULATIONS, 2024 (06 of 2024)'*.

4.8.1. Sub-Criteria: Mobile network coverage and performance in public areas of property (Weightage – 5)

i. **Objective:** The mobile network performance in public areas (e.g., lobbies, corridors) should meet minimum requirements for signal strength and speed which is essential for superior user experience, safety, and efficient operations.

ii. **Assessment Methodology**

a. Conduct RF testing for mobile coverage in public spaces like lobbies, corridors, common utilities like gym, banquet hall, garden, parking, basement and entrances using industry standard tools.

b. Assess data speed and voice call quality over a day (preferably 10 am to 8pm with samples uniformly distributed covering peak hours in property) using test probes for each service provider whose coverage is available on the property and accounted under criteria 7- *Availability of Service Providers'*. Measurements to be carried out shall include peak as well as off-peak hours.

c. **Supporting documents**
   1. RF coverage map/test results of public areas
   2. Speed test logs and call quality reports

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	RF coverage map of public areas		Record and Upload
2.	Speed test logs and call quality reports		Record and Upload

Table 4.42: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	5	If at least 3 service providers have more than 85% mobile coverage for their latest generation of technology in public areas with signal strength as prescribed for network coverage map by TRAI.
2.	3	If at least two service providers have more than 85% mobile coverage for their latest generation of technology in public areas with signal strength as prescribed for network coverage map by TRAI.
3.	2	If at least one service provider has more than 85% mobile coverage for their latest generation of technology in public areas with signal strength as prescribed for network coverage map by TRAI.

Table 4.43: Scoring criteria

4.8.2. Sub-Criteria: Secure public Wi-Fi network coverage and performance in public areas of property (Weightage – 5)

i. **Objective:** Public Wi-Fi in the property may complement the mobile coverage. However, it should be secure and offer a high level of performance, with fast speeds and low latency. With secure and seamless public Wi-Fi coverage in the property, consumers can avail the data and voice service. The assessment shall include evaluating its Wi-Fi network availability, security measures in place, speed, and latency required for reliable digital connectivity.

ii. **Assessment Methodology**

a. Identify all public areas within the property where Wi-Fi services are provided, such as lobbies, lounges, cafeterias, parking areas, and open seating spaces.

b. Conduct sample WPA2/WPA3 compliance checks for security.

c. Conduct coverage, speed and latency tests covering peak hours using industry standard tools.

iii. **Supporting documents**

1. **Wi-Fi Coverage Maps:** Diagrams or heatmaps showcasing Wi-Fi coverage across the property, highlighting areas with weak or strong signals.

2. **Speed Test Results:** Logs of speed and latency test results from different locations and times, demonstrating network reliability.

3. **Wi-Fi Security Audit Reports:** Reports confirming compliance with WPA2/WPA3 security standards, network authentication mechanisms, and encryption configurations.

iv. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Wi-Fi coverage maps and speed test results		Record and Upload
2.	Wi-Fi security audit reports		Record and Upload

Table 4.44: Compliance checklist

v. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	5	If secure Wi-Fi coverage is available in more than 85% of public or common area of the property
2.	3	If secure Wi-Fi coverage is available in more than 75% of public or common area of the property
3.	2	If secure Wi-Fi coverage is available in more than 65% of public or common area of the property

Table 4.45: Scoring criteria

4.8.3. Sub-Criteria: Mobile network coverage and performance in non-public areas (Weightage – 5)

i. Objective: The mobile network should maintain high performance in private or restricted areas, such as residential flats, offices, conference rooms, executive cabins etc. within a property. The objective of this criterion is to assess the availability of mobile network coverage in private areas of the property.

ii. Assessment Methodology

a. Conduct RF testing for mobile coverage in pre-defined non-public areas using industry standard tools.

b. Monitor and assess data speed, video quality and voice call quality over a day using probes. Measurement to be carried out covering peak hours of traffic in the property.

iii. Supporting documents

1. RF coverage map of areas under test or drive test results
2. Speed test logs, call setup success rate and quality (Nean Opinion Score) reports for minimum 100 calls.

iv. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	RF coverage map of areas under test		Record and Upload
2.	Speed test logs and call setup and call quality reports		Record and Upload

Table 4.46: Compliance checklist

v. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	5	If at least 3 service providers have more than 80% mobile coverage for their latest generation of technology in non-public areas with minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
2.	3	If at least 2 service providers have more than 70% mobile coverage for their latest generation of technology in non-public areas with average minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
3.	2	If at least 2 service providers have more than 50% mobile coverage for their latest generation of technology in non-public areas with average minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.

Table 4.47: Scoring criteria

Note: Download speed to be tested through TRAI App.

4.8.4. Sub-Criteria: Secure public Wi-Fi network coverage and performance in non-public areas (Weightage – 5)

i. **Objective:** Public Wi-Fi in the property may complement the mobile coverage. However, it should be secure and offer a high level of performance, with fast speeds and low latency. With secure and seamless public Wi-Fi coverage in the property, consumers can avail the data and voice service. The goal is to assess Wi-Fi coverage in non-public areas, such as residential flats, enterprise workspaces, executive offices, conference rooms, etc. These areas require reliable, high-speed, and encrypted Wi-Fi connectivity to support business operations, data security, and seamless enterprise communication.

ii. **Assessment Methodology**

To evaluate compliance with this sub-criterion, the following steps will be undertaken:

a. Identify all non-public areas within the property where Wi-Fi services are provided.

b. Conduct sample WPA2/WPA3 compliance checks for security.

c. Conduct coverage, speed and latency tests covering peak hours using industry standard tools.

iii. **Supporting documents**

a. **Wi-Fi Coverage Maps:** Diagrams or heatmaps showing Wi-Fi coverage across the property in non-public areas, highlighting areas with weak or strong signals.

b. **Speed Test Results:** Logs of speed and latency test results from different locations and times, demonstrating network reliability.

c. **Wi-Fi Security Audit Reports:** Reports confirming compliance with WPA2/WPA3 security standards, network authentication mechanisms, and encryption configurations.

iv. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Wi-Fi security certifications		Record
2.	Wi-Fi coverage maps and speed test results		Record and Upload

Table 4.48: Compliance checklist

v. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement

1.	5	If secure Wi-Fi coverage is available in more than 85% of non-public areas of the property with minimum download speed of 20 Mbps in peak hours
2.	3	If secure Wi-Fi coverage is available in more than 75% of non-public areas of the property with minimum download speed of 20 Mbps in peak hours
3.	2	If secure Wi-Fi coverage is available in more than 65% of non-public areas of the property with minimum download speed of 20 Mbps in peak hours

Table 4.49: Scoring criteria

Note: Download speed to be tested through TRAI App.

4.8.5. Sub-Criteria: Average download speed of different wireline network(s) in respective highest speed plan (Weightage – 5)

i. **Objective:** The objective of this sub-criterion is to assess the highest average download speed supported by different wireline networks or service providers under their offered plans in the property.

ii. **Assessment Methodology**

a. Conduct speed tests using standard tools (TRAI My Speed App). Conduct tests during peak traffic hour(s) at least at five different user locations.

b. Compare results against advertised speeds under highest plan by respective ISP in highest tier plans. Compare actual speed test results with these promised speeds.

c. **Supporting documents:** Speed test results with timestamps

iii. **Compliance check list:** The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	Speed test results with timestamps		Record and Upload

Table 4.50: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award weightage against this sub-criterion as per the following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	5	If download speed of any wireline network is more than 500 Mbps

2.	3	If the download speed of any wireline network is more than 250 Mbps
3.	2	If the download speed of any wireline network is more than 100 Mbps

Table 4.51: Scoring criteria

4.9. User Experience (Weightage: 5)

User experience assesses user feedback on digital connectivity, including network reliability, speed, latency, and ease of access. It considers factors like seamless browsing, streaming quality and minimal disruptions. A positive experience indicates robust connectivity, while frequent issues highlight areas for improvement.

4.9.1. Sub-Criteria: User feedback on digital connectivity experience (Weightage – 5)

i. Objective: The objective of this sub-criterion is to collect and analyze user feedback regarding their experience with mobile, wireline, and Wi-Fi services in a property. User insights help assess the real-world performance of the digital connectivity infrastructure, identify gaps in service quality and drive improvements to enhance the overall connectivity experience.

ii. Assessment Methodology

a. Conduct structured surveys capturing user satisfaction on voice call quality, voice call accessibility, voice call retainability, data speed (wireline and wireless), latency, service uptime and coverage.
b. The feedback should be collected from a minimum of 10% of the users of the property if the total users are less than 1000. In case total users are more than 1000, then feedback may be collected from a minimum of 100 users. The users in survey should be distributed across gender and broad adult age groups.

iii. Supporting documents

1. User feedback form (please refer to Appendix section for the indicative feedback form)

iv. Compliance check list: The DCRAs shall prepare and maintain the compliance summary in the following format.

S. No.	Item description	Compliance (Yes/No)	Record maintenance requirement (Upload/ DCRA level)
1.	User feedback form		Record and Upload

Table 4.52: Compliance checklist

v. Scoring criteria: The DCRA shall award weightage against this sub-criterion as per the

following scoring criteria.

S. No.	Weightage	Compliance Requirement
1.	5	If 80% users provide overall positive experience for digital connectivity in the property
2.	3	If 70% of users provide overall positive experience for digital connectivity in the property
3.	2	If 50% of users provide overall positive experience for digital connectivity in the property
4.	1	If 40% of users provide overall positive experience for digital connectivity in the property

Table 4.53: Scoring criteria

4.10. Summary of Rating score

After assessment and scoring against each criterion and sub-criteria as per assessment methodology, the DCRA shall prepare the summary of rating score in following format for final updating in the rating platform for generating the rating certificate.

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Rating awarded by DCRA
4.1	Compliance to applicable Model Building Bye Laws (MBBL) and National Building Code (NBC) for digital connectivity	5	4.1.1 Approved DCI design	2.5	
			4.1.2 DCI implementation as per approved DCI design	2.5	
4.2	Provision in civil infrastructure, over and above MBBL and NBC requirements, for ensuring	5	4.2.1 Provision for expansion of telecom rooms and cable pathways	2	
			4.2.2 Provision for expansion of mobile and wireline connectivity	2	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Rating awarded by DCRA
	robust digital connectivity		4.2.3 Ease of access of DCI installed for repair or maintenance	1	
4.3	Provision in power infrastructure, over and above MBBL or NBC requirements, for ensuring reliable digital connectivity	5	4.3.1 Redundancy of power source	1	
			4.3.2 UPS power backup for DCI	3	
			4.3.3 Power continuity monitoring	1	
			4.3.4 Building Management System	1	
4.4	Digital Connectivity Infrastructure Resilience	10	4.4.1 Availability of alternate entry paths for digital connectivity infrastructure	3	
			4.4.2 Non-flooding measures for DCI installation	3	
			4.4.3.Implementation of redundancy in power source and DCI paths	4	
4.5	Future Readiness of Digital Connectivity Infrastructure	10	4.5.1 Availability of the latest generation of mobile connectivity	4	
			4.5.2 Support for future bands	3	
			4.5.3 Upgradability of wireline DCI	3	
4.6	Provision of Wired Connectivity infrastructure	20	4.6.1 Backhaul fiber connectivity (service provider to property)	10	
			4.6.2 Fiber connectivity till user premises	5	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Rating awarded by DCRA
			4.6.3 Fiber connectivity in each room or office or commercial space	5	
4.7	Availability of Service Providers	15	4.7.1 Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure	7.5	
			4.7.2 Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure	7.5	
4.8	Service Performance	25	4.8.1 Mobile network coverage and performance in public areas of property	5	
			4.8.2 Secure public Wi-Fi network coverage and performance in public areas of property	5	
			4.8.3 Mobile network coverage and performance in non-public areas	5	
			4.8.4 Secure public Wi-Fi network coverage and performance in non-public areas	5	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Rating awarded by DCRA
			4.8.5 Average download speed of different wireline network(s) in respective highest speed plan	5	
4.9	User Experience	5	4.9.1 User feedback on digital connectivity experience	5	

5. Award of Rating and Renewal

The Digital Connectivity Rating is a standardized measure used to evaluate the quality, reliability, and readiness of a property's digital infrastructure and on ground service performance. The rating process assesses multiple factors, including infrastructure, regulatory compliance, service performance, and user experience.

Once the assessment is completed, a final rating is assigned, helping property owners, tenants, and service providers make informed decisions regarding digital connectivity in that location. The rating also plays a crucial role in attracting potential businesses and residents who prioritize seamless digital connectivity.

Additionally, this rating is subject to renewal at periodic intervals, ensuring that properties maintain or improve their connectivity standards over time.

5.1. Classification of Ratings

Following the detailed assessment process outlined in Section 4 of this manual, a cumulative score is assigned to each property. Based on this score, a corresponding Digital Connectivity Rating from 1 star to 5 star is awarded, which serves as an indicator of the property's readiness to support high-speed and reliable digital services.

S. No.	Score Range	Digital Connectivity Rating to be awarded
1.	25-40	★
2.	41-55	★ ★
3.	56-70	★ ★ ★
4.	71-85	★ ★ ★ ★
5.	More than 85	★ ★ ★ ★ ★

Table 5.1: Rating Scorecard

5.2. Validity Period of Ratings

The validity period refers to the duration for which a property's Digital Connectivity Rating remains effective before requiring reassessment and renewal.

The difference in validity periods between categories is likely based on factors such as:

i. Infrastructure Stability – Well-equipped properties with robust digital infrastructure may have longer validity periods.
ii. Usage and Demand – Properties with higher connectivity demands may require more frequent reassessments.
iii. Regulatory Compliance – Changes in technology standards and regulations may impact validity duration.

However, to start with, the validity period of both categories of properties i.e. Category 'A' Category 'B' properties shall be valid for 5 years from the date of issue of the rating certificate.

5.3. Reassessment Process

To ensure the continued accuracy and relevance of digital connectivity ratings, DCRA provides a structured mechanism for property managers to apply for re-rating within the validity period of the existing digital connectivity rating certificate (Regulation 29).

This process enables properties to reflect infrastructure upgrades, technological advancements, and regulatory compliance improvements**,** ensuring that the rating remains aligned with the latest connectivity standards.

5.3.1. Eligibility Criteria for Re-rating

A property shall be eligible for re-rating under the following circumstances:

i. **Full upgrade of Digital connectivity infrastructure (DCI)**
If a property has undergone a comprehensive enhancement of its telecom infrastructure, the property manager may seek re-rating to reflect the improvements. Such upgrades may include:

a. Expansion of fiber optic networks
b. Installation of in-building solutions to improve indoor coverage
c. Enhancement of power backup systems for digital infrastructure to ensure seamless connectivity
d. Integration of smart network management systems

ii. **Technological upgradation leading to demand for Re-rating by end users**
If there has been a significant upgrade in the technology deployed at the property and end users or tenants demand a reassessment, a re-rating may be considered. Examples of such technological advancements include:

a. Deployment of 5G, Wi-Fi or high-speed fiber networks to enhance connectivity
b. Significant improvements in broadband speed, latency, and network resilience
c. Implementation of next-generation digital services, such as IoT-enabled automation
d. Increased demand for an upgraded rating due to expanding digital service requirements from occupants, enterprises or businesses operating within the property

iii. **Other changes affecting the rating as per regulatory criteria**
If any modifications or improvements impact the property's compliance with DCRA rating parameters, a re-rating application may be submitted. Such changes may include:

a. Increase in the number of telecom service providers offering wired or wireless services at the property
b. Upgraded compliance with Model Building Bye-Laws (MBBL) and National Building Code (NBC) for digital infrastructure
c. Expansion of telecom facilities to previously underserved areas within the property, ensuring enhanced access
d. Improvement in service reliability, redundancy, and fault tolerance mechanisms

5.4. Renewal Process

To ensure the continuity of a property's digital connectivity rating, DCRA mandates that property managers apply for renewal of their rating before its expiry.

The renewal process ensures that properties continue to meet the regulatory, technical, and service performance standards required for maintaining their digital connectivity classification (Regulation 19). The property manager may apply for renewal of ratings well in advance for continuity of rating for the property.

5.4.1. Application Timeline and Submission

A property manager who intends to renew the digital connectivity rating certificate for a property under their ownership, control, or management must submit a renewal application on the rating platform at least 120 days prior to the expiry of the existing rating. This advance submission ensures sufficient time for assessment, verification, and issuance of the renewed certificate without any lapse in rating status.

The renewal application may include:

i. Any changes or upgrades made to the digital connectivity infrastructure since the last assessment.
ii. A self-declaration of continued compliance with the applicable Model Building Bye-Laws (MBBL), National Building Code (NBC), and DCRA guidelines;
iii. Payment of the renewal processing fee as per the prescribed schedule.

The application for renewal shall be made through the rating platform.

5.4.2. Assessment and Verification Process

Upon receiving the renewal request, DCRA will undertake a comprehensive reassessment to verify that the property still meets the required connectivity standards. The assessment process shall be similar to that followed for award of ratings first time and may *inter-alia* include:

i. **Review of documentation** – Validation of submitted records, compliance reports, and service provider agreements
ii. **Infrastructure inspection** – A physical or digital audit of the property's telecom infrastructure, ensuring continued adherence to the original rating criteria
iii. **Performance evaluation** – Assessment of service reliability, network availability, user feedback, and any upgrades implemented since the last rating period
iv. **Regulatory compliance check** – Verification of compliance with MBBL, NBC, and other applicable digital infrastructure standards

If the property meets or exceeds the required standards, the Digital Connectivity Rating Certificate will be renewed for the next validity period.

5.4.3. Renewal Outcome and Rating Status

The property will receive a renewed rating certificate, valid for the next certification cycle, with updated documentation reflecting the latest assessment.

6. Reporting and Feedback Mechanism

A well-defined stakeholder reporting and feedback mechanism is essential for maintaining transparency, accountability, and continuous improvement in the digital connectivity rating process for buildings. This mechanism ensures that all stakeholders, including property managers, telecom service providers, infrastructure providers, and end users have a structured platform to report issues against the rated, provide feedback, and suggest improvements to the property manager related to digital connectivity within rated properties.

6.1. Monitoring and Reporting Mechanism

DCRA is responsible for overseeing feedback and complaints related to the ratings awarded to properties throughout the rating certificate's validity as per following provisions regulation 11.

i. *"Every DCRA shall monitor feedback or complaints received from service providers or end users during the validity of the rating certificate of the properties, as received through the rating platform, concerning the ratings awarded by DCRA.*

ii. *Every DCRA shall examine feedback or complaints received under sub-regulation (1) and evaluate the need for either review of rating awarded or corrective actions required by the property manager and take follow up action with the property manager, if required, for resolving such identified issues."*

6.2. Mechanism for Stakeholder Feedback

A standardized feedback mechanism will be provided in the rating platform to enable feedback-based oversight on the status of digital connectivity in rated properties during validity of ratings. Stakeholder feedback will be made available to the concerned property manager and DCRA against each rated property. The stakeholders will be required to validate themselves to submit feedback through the platform. The feedback from the stakeholders shall be supported with relevant evidence(s).

The high-level approach for feedback lifecycle will include -

i. **Feedback Categories**
   a. **Connectivity Performance**: Reports on issues such as poor network coverage, insufficient infrastructure, or slow internet speeds.
   b. **Infrastructure Gaps**: Identification of areas requiring upgrades to meet TRAI standards.
   c. **General Suggestions**: Recommendations to improve the overall framework and efficiency.

ii. **Feedback Processing and Resolution by property manager**

   a. **Acknowledgment**: Feedback will be acknowledged automatically by rating platform.
   b. **Review and evaluation**: All feedback received during a month/quarter (based on volume of feedback or issues) will be reviewed by the property manager for evaluation of any corrective action required. In case any corrective action is proposed, it will be updated on the rating platform for information of concerned stakeholders. In addition, property managers may also use other channels of communication for this purpose.

iii. Yearly review of stakeholder feedback by DCRA

DCRA shall review the issues and feedback reported by stakeholders at least on a yearly basis from the date of issue of rating certificate. However, in the case of large number of feedback/complaints for any rated property, DCRA shall undertake review as per requirement or as directed by the Authority. The summary report of such reviews covering analysis of feedback, conclusion and recommended actions by the property manager, if any, shall be uploaded against each property.

iv. Corrective action by the property manager

The property manager concerned shall take corrective action, if any recommended by DCRA, in a time-bound manner within the timelines suggested by the DCRA. The action taken report by the property manager shall be uploaded against the property for review by the DCRA and closure of observations.

6.3. Addressing Non-Compliance

Any instance of non-compliance by the property manager or DCRA shall be dealt in accordance with the provisions of the regulations.

7. Appeal Process

To uphold transparency, fairness, and accountability, the rating framework provides a structured appeal process for property managers who wish to challenge their assigned rating. This section details the procedures, timelines, and regulatory provisions governing appeals, ensuring they are handled promptly and impartially.

The appeal process, under regulation 27, offers property managers a formal mechanism to request a review of their rating if they believe the assessment does not accurately represent the digital connectivity infrastructure of their property.

7.1. Filing of Appeal by Property Manager

Property managers who are dissatisfied with the Digital Connectivity Rating assigned to their property by DCRA may file an appeal through the rating platform. The appeal process ensures a fair opportunity for property managers to challenge their rating based on valid concerns and supporting evidence. The appeal must be submitted within 30 days of the date of issuance of the rating certificate as per the sub-clause (1) of regulation 27.

The appeal justification may include the following:

i. Justification for the appeal, citing specific criteria and sub-criteria that require reconsideration.

ii. Supporting documentation, technical reports, or third-party assessments validating the concerns raised.

iii. Any additional evidence demonstrating improvements in digital connectivity infrastructure that may not have been considered during the initial rating assessment.

7.2. Review of Appeal by DCRA

Once an appeal is submitted, the Digital Connectivity Rating Authority (DCRA) concerned will conduct a review of the rating assessment against indicated criteria or sub-criteria under appeal. DCRA shall evaluate the grounds of appeal, verify the submitted evidence, and, if necessary, conduct a re-evaluation of the property's connectivity infrastructure for respective parameter(s) as may be required.

A final decision on the appeal will be made within 60 days of receipt of the appeal, following the process outlined by the Authority.

If the review finds merit in the appeal, DCRA may:

i. Revise the rating based on newly presented evidence.

ii. Uphold the original rating if no discrepancies or new qualifying factors are identified.

iii. Recommend corrective actions to the property manager for potential re-rating in the future.

7.3. Escalation of Appeal to the Authority

If the property manager is still not satisfied with the decision of the DCRA, they may escalate the appeal to the Telecom Regulatory Authority.

i. The escalation must be filed within 30 days from the date of DCRA's appeal decision.
ii. The appeal must be submitted in the prescribed format and include all necessary documentation.
iii. A specified fee, as determined by the Authority, must accompany the appeal submission.
iv. No appeal shall be entertained by the Authority after expiry of the period as provided under the regulations.

7.4. Examination of Appeal by Authority

Upon receiving an escalated appeal, the Telecom Regulatory Authority will conduct an independent review to ensure that the final decision is fair and justified.

i. **Independent Case Assessment:** The Authority may directly evaluate the case based on submitted evidence and regulatory provisions.

ii. **Expert Panel Review:** The Authority may appoint a specialized panel of experts to conduct a detailed examination and provide recommendations.

The Authority shall ensure that all relevant technical, regulatory, and procedural aspects are evaluated before making a final decision.

8. Review and Updates of Rating Manual

To ensure that the Digital Connectivity Rating Manual remains relevant, accurate, and aligned with industry advancements, a structured review and update process will be undertaken at regular intervals. This process will account for technological evolution, regulatory changes, stakeholder feedback, and performance insights, ensuring that the rating framework remains effective in assessing and improving digital connectivity in properties.

8.1. Process for Periodic Updates

To maintain the relevance, accuracy, and effectiveness of the rating manual for digital connectivity inside properties, periodic updates will be conducted through a structured and inclusive approach.

The process begins with stakeholder feedback collection, where inputs from key entities such as property managers, DCRAs, telecom service providers, infrastructure providers, and technical experts are gathered. This helps identify gaps, challenges, and areas for improvement in existing rating criteria.

Based on insights from stakeholder feedback and benchmarking, a draft revision of the manual will be developed, incorporating necessary modifications and refinements. This draft will then undergo validation through expert reviews, where subject matter specialists will assess the proposed changes to ensure technical accuracy, regulatory compliance, and feasibility of implementation.

This structured process guarantees that the rating manual remains adaptive, future-ready, and reflective of the latest industry advancements, thereby promoting high-quality, resilient, and future-proof digital connectivity infrastructure in properties.

9. Best Practices for Digital Connectivity in Properties

To ensure high-quality, resilient, and future-ready digital connectivity in properties, a structured set of guidelines and best practices help to minimize cost, improve aesthetics and improve user experience. These best practices are indicative in nature to help property managers, infrastructure providers, and telecom service providers in designing and implementing digital connectivity solutions that meet current and future technological requirements while ensuring seamless user experience.

9.1. Best Practices for Digital Connectivity

To ensure high-quality digital connectivity in properties, the following best practices should be adopted -

i. **Digital Connectivity Infrastructure Planning**

Digital connectivity infrastructure should be planned right from the building design stage like plan for water, fire system and electricity. Incorporating digital connectivity infrastructure during the initial design phase of a property is critical for seamless deployment of broadband and wireless technologies while reducing considerable cost compared to retrofitting of DCI.

Key considerations include:

a. **Conduit and Cable Pathways:** Ensuring dedicated and well-structured pathways for fiber optic and ethernet cables, avoiding bottlenecks and future installation challenges.

b. **Dedicated Telecom Spaces:** Allocating sufficient space for telecom rooms, network equipment and distribution points within the building.

c. **Regulatory Compliance:** Aligning digital connectivity infrastructure with Model Building Byelaws (MBBL), National Building Code (NBC), and telecom regulations to avoid future rework or legal issues.

d. **Collaboration with Telecom Service Providers:** Engaging with telecom service providers and DCI design experts in early in the project to ensure optimal network design.

The National Building Code may be referred to for further details which provides detailed guidelines for planning digital connectivity/ ICT infrastructure in the buildings.

ii. **High Speed Internet Readiness:**

To meet the increasing demand for high-speed, low-latency internet, properties should:

a. Deploy **fiber optic backbone connectivity** as the primary infrastructure for internet distribution. Fiber-optic networks offer higher bandwidth capacity, faster speeds, and lower latency compared to traditional copper-based networks.

b. Ensure **multiple fiber entry points** in the property to enable connectivity from different ISPs, increasing network resilience and competition-driven pricing benefits for end-users.

c. Provision **scalable bandwidth options** to accommodate future demands, ensuring seamless support for 5G, IoT, AI applications, and cloud services.

d. Implement **structured cabling systems** (Category 6/6A and fiber optic cabling) for internal network distribution, ensuring high-speed connectivity across all areas of the property.

iii. Wireless Network Optimization

Wireless connectivity plays a pivotal role in digital infrastructure, and optimized in-building solutions are essential for ensuring uninterrupted coverage and high-speed connectivity. Key strategies include:

a. **Distributed antenna systems (DAS):** Deploying DAS solutions to enhance cellular coverage in large properties, high-rise apartments, and commercial spaces, eliminating dead zones.

b. **Small cells deployment:** Installing small cell technology in dense urban environments to boost wireless network capacity, particularly for 4G and 5G networks.

c. **Wi-Fi offloading and optimization:** Implementing high-density Wi-Fi solutions to offload mobile data traffic, ensuring optimal indoor coverage and performance.

d. **Intelligent network management:** Leveraging AI-driven self-optimizing networks (SON) to dynamically adjust power levels, frequencies, and coverage areas for enhanced user experience.

iv. Redundancy and Resilience

To prevent service disruptions and downtime, properties must integrate robust redundancy and resilience measures in their digital connectivity infrastructure. These include:

a. **Multiple ISP Connections:** Establishing connectivity from two or more internet service providers to ensure a failover in case of a primary network outage.

b. **Backup Power Supply:** Ensuring continuous operation of network equipment through uninterrupted power supply (UPS)/ battery backups, and generators.

c. **Alternate Routing Paths:** Designing redundant cable pathways to prevent single points of failure, ensuring continuous connectivity even in case of fiber cuts or infrastructure damage.

d. **Disaster Recovery Plans:** Implementing automated failover mechanisms to restore network swiftly after failures.

v. Smart Building Integration

Smart buildings integrate IoT-enabled sensors, automation, and AI-driven management systems to enhance connectivity performance, energy efficiency, and security. Key aspects include:

a. **Smart network monitoring**: Using AI-powered network analytics to detect anomalies, optimize bandwidth allocation, and proactively resolve connectivity issues.

b. **Energy efficient networking**: Utilizing power-saving features in network devices and employing smart energy management systems to reduce operational costs and environmental impact.

c. **Integration with Smart Building Management Systems (BMS)**: Enabling real-time control of network operations through a centralized BMS for efficient fault detection and system management.

vi. Future Proofing

Properties must be designed with future-ready digital connectivity infrastructure to support emerging technologies and next-generation network advancements. Future-proofing measures include:

a. **5G ready infrastructure**: Deploying fiber-based backhaul and small cell solutions to accommodate 5G deployment within buildings.

b. **Edge computing integration**: Ensuring support for edge data centers within properties to minimize latency and improve data processing for smart applications, AR/VR, and AI-driven analytics.

c. **IPv6 adoption**: Implementing IPv6-compliant networks to accommodate the growing number of connected devices and ensure future scalability.

9.2. Integration of Connectivity Infrastructure in Design and Construction

To achieve seamless integration of digital connectivity infrastructure in building design and construction, following may be considered:

i. **Pre-wiring for connectivity:** Include dedicated ducts and cable trays for fiber, ethernet, and power cables.

ii. **Structured cabling standards:** Adopt structured cabling solutions in compliance with national standards of BIS, TEC, etc.

iii. **Equipment rooms and space allocation:** Allocate space for telecom equipment, server rooms, and network operation centers within the building.

iv. **Network equipment:** Plan sufficient network equipment in common areas, lobbies, workspaces, and residences to ensure seamless connectivity based on expected footfall and traffic.

9.3. Collaboration with stakeholders

Property managers should collaborate with concerned stakeholders right from planning stage to build resilient and future ready DCI in the properties and facilitate RoW permissions for telecom, internet service providers and digital connectivity infrastructure providers to deploy fiber and wireless solutions efficiently. Collaboration with end users and understanding their needs is the best way to plan and deliver digital connectivity infrastructure which meets the expectations.

10. Appendix

10.1. Frequently Asked Questions (FAQ)

i. What is the purpose of Digital Connectivity Rating for properties?

The Digital Connectivity Rating is an initiative by the Telecom Regulatory Authority of India (TRAI) to assess and benchmark the quality of digital connectivity within properties. The primary objective is to encourage property managers to build digitally connected and future ready smart properties and assess whether properties are equipped with robust digital infrastructure, enhancing user experience for tenants, residents, and businesses.

ii. What is the regulatory framework for the rating system?

Digital Connectivity Rating is governed by the provisions in "Rating of Properties for Digital Connectivity Regulations, 2024" and further follow-up orders or guidelines issued by TRAI.

iii. What parameters are assessed in the rating process?

The rating system evaluates properties based on the rating criteria provided in the regulations. Some of the key aspects assessed under framework include:

i. **Availability of Connectivity Options**: Access to mobile networks (2G/3G/4G/5G), Wi-Fi, fiber broadband, and private networks.
ii. **Indoor Coverage Quality**: Signal strength and coverage within the building, including basements, elevators and floors.
iii. **Digital Infrastructure Readiness**: Deployment of in-building solutions (IBS), distributed antenna systems (DAS), small cells and optical fiber backbones.
iv. **Network and power Redundancy**: Availability of backup connectivity and power sources to ensure uninterrupted services.
v. **Future-Readiness**: Scalability and ease of integration with advanced technologies, including 5G and IoT solutions.

iv. Who benefits from this rating system?

i. **Property Managers:** Gain recognition and competitive advantage by providing high-quality digital infrastructure.
ii. **Consumers**: Enjoy uninterrupted connectivity for work, entertainment, and communication.
iii. **Telecom Service Providers**: Identify opportunities for infrastructure upgrades and improved service delivery.
iv. **Government Authorities and Regulators**: Promote digital connectivity infrastructure and ensure consumer trust and protection. The improved digital connectivity further drives digital economy and business opportunities in the country.

v. Is the Digital Connectivity Rating mandatory under TRAI regulations?

Currently, the rating system is voluntary. However, TRAI strongly encourages participation by property developers and property owners, and telecom service providers to plan digital connectivity in the real estate sector from its inception and get it rated under TRAI rating framework.

vi. What types of properties are covered under the rating framework?

The rating framework applies to all building types, including:

i. Residential complexes
ii. Office spaces and commercial properties
iii. Malls and retail outlets
iv. Educational institutions
v. Healthcare facilities
vi. Airports
vii. Metro rail
viii. Stadiums and open spaces

vii. What challenges might property managers face in achieving higher ratings?

Building owners may encounter the following challenges:

i. Limited infrastructure for in-building solutions such as DAS or fiber backbone.
ii. High costs are associated with upgrading outdated systems.
iii. Difficulty in integrating services from multiple telecom service providers.

TRAI encourages collaborations between property managers and telecom providers to overcome these barriers.

viii. Are there incentives for properties that achieve higher ratings?

While there are no mandatory financial incentives outlined by TRAI, properties with higher ratings benefit from enhanced marketability, tenant satisfaction, and alignment with smart city goals. Property managers may also see more demand for digital connected buildings.

ix. How can a building apply for the Digital Connectivity Rating?

On applications can be submitted through the process specified in TRAI's guidelines. Typically, this involves:

i. One time registration on rating platform
ii. Apply for rating of property and provide relevant details
iii. Choose the DCRA of your choice
iv. Submit the application
v. The rating process starts.

x. Where can I find TRAI's official guidelines for the rating system?

TRAI's regulation and orders/guidelines for the Digital Connectivity Rating framework are available on its official website i.e. www.trai.gov.in.

xi. How does this initiative align with India's telecom policy?

The rating system aligns with the objectives of the National Digital Communications Policy (NDCP), 2018, which emphasizes:

i. Enhancing broadband penetration
ii. Promoting ICT readiness across sectors
iii. Ensuring affordable and reliable digital connectivity

By setting a rating framework for digital connectivity inside properties where more data is used than at street or open areas, TRAI contributes broader goals of creating a digitally inclusive society.

xii. How does the rating process promote innovation in building design?

By encouraging the integration of future-ready digital infrastructure, TRAI's rating system motivates property managers to adopt innovative solutions, such as:

i. Smart building technologies
ii. Energy-efficient network equipment
iii. Seamless integration of IoT devices and 5G networks

This fosters a more competitive and technology-driven property development.

10.2. List of Applicable Standards and References

i. TRAI Regulation on Rating of Properties for Digital Connectivity,2024
ii. National Building Code, 2016 as amended from time to time.
iii. Addendum to Model Building Bye Laws (MBBL)
iv. Building Bye-laws applicable in the respective State/Union Territory

10.3. Documents Checklist

Master checklist of supporting documents from property manager to be recorded and uploaded by Digital Connectivity Rating Agency (DCRA)

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
1	Compliance to Applicable Model	Approved Digital Connectivity	Approved DCI design documents by competent authority	Record and Upload

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
2	Building Bye Laws (MBBL) and National Building Code (NBC) for Digital Connectivity	Infrastructure (DCI) design	Design compliance with MBBL and NBC standards	Record
3			Design drawings certified by competent authority	Record
4		DCI implementation as per approved DCI design	As-build DCI is as per approved design	Record and Upload
5			Photographs of DCI	Record and Upload
6			Site inspection reports for DCI with design comparisons	Record
7			Testing and Commissioning certificates for DCI as applicable	Record
8	Provision in Civil Infrastructure, over and above MBBL and NBC requirements, for Ensuring Robust Digital Connectivity	Provision for expansion of telecom rooms and cable pathways	Building layout plans for DCI or ICT infrastructure duly marked and signed by DCRA and property manager	Record and Upload
9			Expansion feasibility reports – DCI or ICT infrastructure pathways and telecom rooms	Record
10		Provision for expansion of mobile and wireline connectivity	Updated network diagrams	Record
11			Future expansion plans	Record
12		Ease of access of DCI installed for repair or maintenance	Site photos showing maintenance pathways	Record
13			Maintenance checklists	Record
14	Provision in Power Infrastructure,	Redundancy of power source	Power layout diagrams	Record

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
15	over and above MBBL or NBC requirements, for Ensuring Reliable Digital Connectivity		Load switchover testing reports	Record
16		UPS power backup for DCI	Electrical system line diagram including redundant input sources and UPS system(s)	Record
17			Whether all key DCI systems affecting service availability are on UPS?	Record
18			Whether UPS system has redundancy?	Record
19			UPS switch over successfully tested during sample testing?	Record
20			Whether duration of UPS backup matches with available test reports with full DCI load?	Record
21		Power continuity monitoring	Monitoring system high level diagram	Record and Upload
22			Capture monitoring system dashboard screenshot	Record and Upload
23			Monitoring system diagram	Record and Upload
24		Building Management System	BMS system architecture diagrams	Record
25			Test report on DCI power systems, fire alarms and HVAC integration with BMS	Record
26			Sample test report on detection and notification of main power supply failure and takeover by generator/UPS for DCI	Record
27	Digital Connectivity Infrastructure Resilience	Availability of alternate entry paths for digital connectivity infrastructure	Ducts layout diagrams from different external entry points for fiber/ DCI	Record

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
28			Pathway layout diagrams from ducts to telecom room(s) for fiber/ DCI	Record
29		Non-flooding measures for DCI installation	Whether DCI/telecom room(s) are above ground floor as per design and implementation?	Record
30			Whether key power systems like UPS/ Generators for DCI are installed on ground or higher floor with non-flooding consideration?	Record
31			Whether drainage system is implemented as per design layout?	Record
32		Implementation of redundancy in power source and DCI paths	Whether DCI is supported with redundant power sources (Generator/UPS)?	Record
33			Whether power system network layout for DCI is implemented with path diversity?	Record
34			Whether sample test reports demonstrate testing of redundancy?	Record

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
35			Whether path diversity for fiber and other cables (DTH/ethernet as applicable) across the building blocks, basements and towers from digital connectivity infrastructure room(s) is implemented?	Record
36	Future Readiness of Digital Connectivity Infrastructure	Availability of the latest generation of mobile connectivity	Whether the equipment installed supports the latest generation of mobile connectivity?	Record
37			Photographs of installed latest generation mobile connectivity equipment	Record
38		Support for future bands	Bill of Material (BoM) installed at building along with datasheets for relevant equipment	Record
39			Whether DCI supports future bands for mobile or Wi-Fi network as applicable as per datasheets?	Record
40		Upgradability of wireline DCI	Upgradability of existing wireline DCI equipment's (switches/routers/splitters/PON etc.) and relevant cables	Record
41			Whether the bandwidth supported through optical fiber with speed 1 Gbps or higher?	Record
42	Provision of Wired Connectivity Infrastructure	Backhaul fiber connectivity (service provider to property)	Fiber testing results	Record
43			Photographs of fiber termination point at main telecom room	Record and Upload
44		Fiber connectivity till user premises	Fiber layout diagrams up to user premises	Record and Upload
45			Sample fiber test reports confirming connectivity to each user premise	Record and Upload
46		Fiber connectivity in	Network layout diagram for user units showing fiber terminations	Record

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
47		each room or office or commercial space	Sample test reports for fiber terminations testing	Record and Upload
48	Availability of Service Providers	Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure	Telecom/Internet Service Provider (ISP) Agreements	Record
49			Network integration certificates/test reports	Record
50			Service subscription status	Record
51		Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure	RF coverage map in the property or walk/drive test results	Record and Upload
52			Network performance test results from multiple operators	Record
53			Agreements signed with Telecom Service Providers (without commercial details)	Record
54	Service Performance	Mobile network coverage and performance in public areas of property	RF coverage map of public areas	Record and Upload
55			Speed test logs and call quality reports	Record and Upload
56		Secure public Wi-Fi network coverage and performance in public areas of property	Wi-Fi coverage maps and speed test results	Record and Upload

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
57			Wi-Fi security audit reports	Record and Upload
58		Mobile network coverage and performance in non-public areas	RF coverage map of areas under test	Record and Upload
59			Speed test logs and call setup and call quality reports	Record and Upload
60		Secure public Wi-Fi network coverage and performance in non-public areas	Wi-Fi security certifications	Record
61			Wi-Fi coverage maps and speed test results	Record and Upload

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
62		Average download speed of different wireline network(s) in respective highest speed plan	Speed test results with timestamps	Record and Upload
63	User Experience	User feedback on digital connectivity experience	User feedback logs from helpdesk systems	Record and Upload

10.4. User Feedback Form

[*This form is to evaluate the feedback of end user/consumer on digital connectivity experience in the property. Your feedback will help in assessment of the level of digital connectivity inside the property for award of Star rating under TRAI regulations. You may provide your feedback on the scale of 1-5 by writing numbers 1 to 5 in the box against respective questions. Here 1 (poor) being the lowest, 2(average), 3(good), 4(very good) and 5(Excellent) being the highest.]*

(a) Name of property: _____ (b)URIN (As per rating portal): _____

(b) Type of property: ☐ Residential ☐ Commercial ☐ Government Properties ☐ Shopping malls ☐ Convention Centre ☐ Hospitality

(To be filled by DCRA)

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1. User Details

i. Name of End User/consumer: _____
ii. E-mail Id/Mobile No: _____

2. Mobile Service Performance

i. How would you rate your mobile voice call experience? ☐

ii. Are you satisfied with mobile internet performance? ☐

3. Broadband Service Performance

i. How would you rate the ease of provisioning of new broadband connections? ☐

ii. How satisfied are you with the speed of the internet connection? ☐

iii. How will you rate the resolution mechanism? ☐

4. Mobile Network Coverage

i. How would you rate the wireless network coverage in indoor spaces? ☐

ii. How would you rate the wireless network coverage in outdoor areas? ☐

5. Overall Experience

i. How would you rate the overall digital connectivity at this property? ☐

6. Suggestions for Improvement

Signature of the end user/consumer

Signature of DCRA representative.