भारतीय दूरसंचार विनियामक प्राधिकरण

Telecom Regulatory Authority of India

Consultation Paper

on

Review of Rating of Properties

for

Digital Connectivity Regulations, 2024 (7 of 2024)

New Delhi, India
27th February 2026

NBCC World Trade Centre, Tower-F, (4th to 7th Floors), Nauroji Nagar, New Delhi- 110029

Stakeholders are requested to submit their comments, feedback, and suggestions on the proposed amendments and on any other aspects of Rating of Properties for Digital Connectivity Regulations, 2024, preferably in electronic form, on TRAI website in specific Template mentioned in Annexure-I, or to adv-qos1@trai.gov.in with a copy to ja.qos1@trai.gov.in by 23rd March 2026.

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Chapter 1: Introduction

1. Background

1.1. Digital connectivity has become a critical enabler of modern living and economic activity. Over the last decade, rapid digitalisation has transformed governance, education, healthcare, commerce, innovation, and social interaction. As dependence on digital platforms continues to increase, the availability of seamless and reliable digital connectivity has emerged as a foundational requirement for inclusive growth and sustainable development.

1.2. Studies and industry reports indicate that a significant proportion of data consumption occurs **inside buildings**. This trend is particularly pronounced with the deployment of advanced mobile technologies such as **4G and 5G**, which operate on higher frequency bands to deliver high data rates but are more susceptible to signal attenuation due to walls, building materials, and construction design. As a result, in-building digital connectivity has become a critical determinant of User Experience and Quality of Service (QoS).

1.3. Telecom Regulatory Authority of India Act, 1997 (24 of 1997), vide Sub-clause (v) of clause (b) of sub-section (1) of section 11, mandates the Authority to "lay down the standards of Quality of Service to be provided by the service providers and ensure the quality of service and conduct the periodical survey of such service provided by the service providers so as to protect the interest of the consumers of telecommunication services".

1.4. To address these challenges in a structured manner, the Telecom Regulatory Authority of India (TRAI) submitted its recommendations on **"Rating of Buildings or Areas for Digital Connectivity"** to the Government on **20th February 2023**. The

recommendations were **accepted by the Government,** with certain modifications, and subsequently referred to relevant Ministries and institutions for implementation. Department of Telecommunications (DoT), through its Office Memorandum dated 09th July 2025, has referred these action points to multiple stakeholders, including the Ministry of Housing and Urban Affairs **(MoHUA)**, Bureau of Indian Standards **(BIS)**, Telecommunication Engineering Centre **(TEC)**, National Communications Academy-Technology **(NCA-T)**, Ministry of Rural Development **(MoRD)** and other concerned bodies, for creation of enabling in-building telecommunication infrastructure and operationalising the Digital Connectivity Rating framework through appropriate amendments to Model Building By-laws (MBBL), National Building Code (NBC), standards, and institutional mechanisms for capacity building. The Department of Telecommunications (DoT) Office Memorandum No. 20-1341/2023-AS-I dated 09th July 2025 is attached at Appendix-A.

1.5. To implement the rating framework as per these recommendations, TRAI notified the **"Rating of Properties for Digital Connectivity Regulations, 2024"** (07 of 2024) on **25th October 2024**, for rating properties based on their digital connectivity readiness. The framework aims to promote collaboration among Property Managers, Digital Connectivity Infrastructure Providers (DCIPs), Digital Connectivity Rating Agencies (DCRAs), Service providers, and other stakeholders, while ensuring transparency, accountability, and self-sustainability.

1.6. To operationalise the Regulations, TRAI issued a **Notice Inviting Comments on the Draft Manual for Assessment of Digital Connectivity** on **13th May 2025**. After examining stakeholder inputs and incorporating suitable suggestions, the **Rating Manual** was released on **13th August 2025**. The rating manual provides the operational backbone of the Digital Connectivity Rating framework, laying down the roles and responsibilities of stakeholders, rating methodology and assessment stages,

criteria and sub-criteria for rating including their scoring approach, and detailed procedures for application, evaluation, certification, renewal, and appeals. By translating regulatory intent into a clear and standardised assessment process, the Manual enables consistent implementation of the framework across diverse property types, while ensuring transparency and credibility of the ratings awarded.

1.7. Subsequently, the Authority invited applications for registration of **Digital Connectivity Rating Agencies (DCRAs) on 07th April 2025.** A capacity-building workshop for registered DCRAs was held on **16th September 2025**. Till date registration has been granted to twenty DCRAs as per the eligibility criteria specified in regulation 5. The registration process is on-going and interested firms, meeting required eligibility criteria as per regulation 5, may apply for registration as DCRA.

1.8. Further, the Authority invited applications for registration of **Property Manager on 29th September 2025**. Property Managers have started showing interest and few have already registered in accordance with regulation 13.

1.9. TRAI has also conducted multiple awareness sessions and workshops for various stakeholders. For those Property Managers who have begun registering, the rating of their properties is expected to commence shortly.

1.10. Further details about the rating process are available on the dedicated portal at *https://trai.gov.in/dcra-portal/*. The portal provides a consolidated view of the framework, including its objectives and rating process, the notified Regulations, Orders issued under the framework, the Rating Manual, details of registered DCRAs, and other reference material such as press releases, notices, FAQs, media content, and contact information.

2. Scope of Consultation

2.1. During the process of interaction and engagement with stakeholders, as discussed in **Chapter 2**, and based on early implementation experience of the Digital Connectivity Rating framework, the Authority has examined stakeholder inputs in light of ecosystem requirements. These inputs have highlighted certain areas where additional clarity, refinement, or alignment with on-ground practices may be beneficial for effective implementation of the Regulations.

2.2. Accordingly, the scope of this consultation paper is to seek views of stakeholders on the **proposed amendments in Regulation** placed at **Chapter 4** and **proposed amendments in Rating Manual in Chapter 5**. Draft Regulation and Rating Manual with Amendments is present at Annexure-II and III respectively. In addition, stakeholders are also invited to submit their **comments, feedback, and suggestions on any other aspects** of the *Rating of Properties for Digital Connectivity Regulations, 2024* and Rating Manual in the prescribed format.

3. Structure of the Document

This consultation paper is organised into five chapters. **Chapter 1** provides the introduction and background to the Digital Connectivity Rating framework, including the regulatory context, key milestones, and the current status of implementation. **Chapter 2** presents the current scenario and summarises stakeholder experience and observations emerging from early implementation of the framework. This chapter highlights key areas identified by stakeholders that require further examination, based on ecosystem interactions and practical deployment realities. **Chapter 3** sets out the proposed amendments to the Regulations, based on the stakeholder observations discussed in Chapter 2. It explains the context and proposed approach to address the

concerns of the stakeholders through proposed amendments. **Chapter 4** and **Chapter 5** contain proposed amendments in Regulation and Rating Manual respectively. The draft regulation and rating manual with amendments is present in **Annexure-II and III** and the amendments are highlighted in yellow colour.

Annexure-I provides the template for submission of stakeholder comments. **Annexure-IV** provides supporting formats and reference material, including the draft of declaration to be submitted by Property Managers while applying for rating of under-construction properties. **Annexure-V** provides the Indicative Template for Optional Digital Connectivity Audit Report. The **Appendix-A** contains Department of Telecommunications (DoT) Office Memorandum No. 20-1341/2023-AS-I dated 09th July 2025.

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Chapter 2: Stakeholder Feedback on Regulations

1. Present Implementation Status

1.1. Following the notification of the *Rating of Properties for Digital Connectivity Regulations, 2024* and the release of the Rating Manual, the Digital Connectivity Rating framework has entered its initial implementation phase. This phase has focused on ecosystem readiness, including registration and capacity building of Digital Connectivity Rating Agencies (DCRAs), registration of Property Managers, and awareness creation among ecosystem stakeholders.

1.2. The Authority is conscious of the fact that this rating framework is one of its kind in the digital connectivity ecosystem so far. Therefore, it has to be agile to quickly adapt to the stakeholder needs, whenever required.

1.3. Therefore, the Authority has actively engaged with a wide range of stakeholders across the digital connectivity and real estate ecosystem. These engagements have provided important insights into how the framework is being understood, interpreted, and expected to operate across different property types, stages of development, and market contexts.

2. Stakeholder Inputs on Rating Framework

2.1. During formulation and early implementation of the Digital Connectivity Rating framework, the Authority engaged with stakeholders through **multiple interactions**, including workshops with registered Digital Connectivity Rating Agencies (DCRAs) and central government ministries and departments, interactions with Property Managers and real estate stakeholders during awareness and onboarding initiatives, and other relevant public sector institutions.

2.2. In addition to inputs received from stakeholders through these interactions, the Authority also undertook its **own assessment** based on early implementation experience, feedback on Rating Manual, and examination of how the framework implementation is progressing across different property types and stages of development.

2.3. Collectively, these stakeholder inputs and the Authority's assessment indicate broad support for the objectives of the Digital Connectivity Rating framework, particularly its focus on improving in-building digital connectivity, enabling informed consumer choice, and encouraging systematic provisioning of Digital Connectivity Infrastructure (DCI).

2.4. At the same time, the above interactions highlighted few areas where additional clarity or refinement may be relevant, particularly in relation to:

a) the ability of the rating to **meaningfully differentiate** between properties with varying levels of digital connectivity readiness and performance;

b) the application of the rating framework in the context of **properties under construction**, which constitute a significant segment of the real estate market; and

c) the review of present categorisation of certain property types under Category 'A' and Category 'B'.

d) the need of Property Managers to seek a fair evaluation of its Digital Connectivity Infrastructure in order to plan improvement even before applying for a Digital Connectivity Rating.

2.5. Review of Star Rating Levels

2.5.1. As per **Regulation 26**, properties are currently assigned digital connectivity ratings on a **five-star scale**, based on aggregate scores achieved across prescribed criteria and sub-criteria as follows:

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	★★★★★

2.5.2. Stakeholders observed that, in practice, properties with **different levels of digital connectivity readiness** may fall within the same star category, particularly where scores lie close to the boundaries between rating levels.

2.5.3. From the perspective of **Property Managers**, such outcomes limit the ability to reflect incremental improvements in digital connectivity performance. Stakeholders further highlighted that under the current structure, progression from one Star rating to the next Star level requires a minimum additional score of approximately 15 points. As a result, even where measurable improvements are made across one or more criteria or sub-criteria, such improvements may not translate into a higher star rating unless the cumulative score crosses the next

defined threshold. From the perspective of **consumers**, they reduce the extent to which ratings convey nuanced differences in connectivity experience between properties.

2.5.4. Stakeholders noted that this has implications for how rating outcomes are interpreted and used by different participants within the ecosystem.

2.6. Rating of Properties Under Construction

2.6.1. Stakeholders highlighted that a substantial proportion of residential and commercial properties in the country are **marketed, booked and sold during the construction phase itself**, often well before physical completion.

2.6.2. The regulations already recognise the relevance of Digital Connectivity Infrastructure (DCI) during the construction stage. Regulation 17 provides that *"(1) Every property manager shall comply with the approved design for implementation of DCI during the construction stage and shall not make any change without the prior approval of the agency which has granted such approval."*

2.6.3. For under-construction properties, currently as per Rating Manual (3.7 vi. e.), *"The Due Diligence stage-II for under construction will commence on completion of DCI construction, testing and integration"*.

2.6.4. While Property Managers may make design-stage provisions for Digital Connectivity Infrastructure (DCI), there is currently no structured mechanism or recognised document through which the intended level of digital connectivity can be communicated during the marketing and booking of properties including in construction phase. Consequently, Property Managers are unable to credibly demonstrate the level of digital connectivity planned in the property, and

consumers, who often make purchase decisions at this stage, have **no visibility** into the planned level of digital connectivity for which the property is being designed.

2.6.5. The Authority noted that aforesaid aspect is important for the property managers to encourage them for planning the digital connectivity infrastructure as a part of building plan while preserving the credibility of digital connectivity ratings. Therefore, there is need for a **structured and transparent mechanism** that provides visibility of rating right from design stage through construction to completion stages within the framework of assessment of digital connectivity under the regulation.

2.7. Categorisation of Property Types

2.7.1. The objective of classification of properties as specified in regulation 3 is solely for the purpose of applying the rating criteria which are relevant to assess the digital connectivity in the respective category or group of properties. Currently the regulation 3 provides for the following grouping of properties under Category 'A' and 'B':

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

Sl. No.	Classification	Category	Type of Property
			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.

2.7.2. During Authority's assessment of implementation experience, it was noted that certain property types presently included under **Category 'B'**, such as hospitals, hotels, and educational institutions, exhibit usage patterns and in-building digital connectivity requirements comparable to commercial office complexes and shopping malls, which are classified under Category 'A'. Conversely, it is also observed that requirements of certain property types currently included under Category 'A', such as multi-modal logistics parks, are more aligned with properties under Category 'B'. Further, under the existing classification, "Transport corridors" include expressways, highways, railway routes, etc. While metro corridors are not explicitly mentioned, they form a critical part of urban transport infrastructure and hence needed to clearly mentioned and classified for clarity of stakeholders.

2.8. Digital Connectivity Evaluation without entering into Rating Process

2.8.1. The Authority is of the view that there may be scenarios where a Property Manager may wish to evaluate present level of Digital Connectivity Infrastructure (DCI) in a property for the purpose of identifying gaps and improvements required, without applying for a Digital Connectivity Rating.

2.8.2. Stakeholders highlighted that once a rating is awarded, it becomes publicly visible, and therefore some Property Managers prefer to first identify gaps and undertake improvements before entering into a formal rating assessment.

2.8.3. Stakeholders further indicated that, in such situations, Property Managers may find value in obtaining an audit of the existing digital connectivity infrastructure against the criteria and sub-criteria prescribed in the Rating Manual, primarily for assessing the present status, gaps and areas requiring improvement.

2.8.4. The Authority notes that such audits may encourage proactive enhancement of Digital Connectivity Infrastructure and may, over time, support wider adoption and effectiveness of the Digital Connectivity Rating framework. Therefore, the Authority proposed to enable the property managers to undertake optional digital connectivity audit of their properties through TRAI registered DCRAs without applying for the ratings. The property managers will be free to choose the DCRA and negotiate fees with them. DCRAs will declare their maximum chargeable fee on the rating platform for the reference of the Property Managers. DCRAs will audit the digital connectivity in accordance with the rating manual and provide relevant details including sub-criteria wise present status of digital connectivity and areas for improvement in their audit report.

2.9. Summary of Inputs

The above analysis highlight areas where additional clarity, refinement, or alignment with on-ground practices may support effective implementation and wider adoption of the rating framework under the regulations. Accordingly, these inputs form the basis for examining possible approaches, as discussed in the following chapter.

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Chapter 3: Analysis and Proposed Amendments to the Regulations

1. Background and Context

1.1. As discussed in Chapter 2, inputs received from stakeholders during early implementation of the Digital Connectivity Rating framework, along with Authority's own assessment, indicate that while the framework is **conceptually robust**, certain aspects would benefit from additional clarity and refinement to enhance effectiveness and usability.

1.2. Accordingly, the Authority has identified specific provisions of the Regulations for amendments to meet practical requirements, improve transparency for consumers, and support smoother adoption by Property Manager and other stakeholders.

1.3. Accordingly, the proposed amendments relate to:

a) Review of Star Rating Levels

b) Rating of Properties Under Construction; and

c) Categorisation of Property Types

d) Optional Digital Connectivity Audit

The proposed amendments in the regulations in each of above case are discussed in following sections.

2. Proposed Amendment I: Review of Star Rating Levels

2.1. Existing Provision under the Regulations

2.1.1. As per regulation 26, properties are currently rated on a **five-level star rating scale**, namely 1-Star, 2-Star, 3-Star, 4-Star, and 5-Star, based on the score achieved against the applicable criteria and sub-criteria. Current rating approach:

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	★★★★★

2.1.2. Under the existing framework, properties are assigned digital connectivity ratings on a **five-star scale**, based on aggregate scores achieved across prescribed criteria and sub-criteria as mentioned in **regulation 26.**

2.1.3. It is noted that in practice, the score range for each rating is too wide and the properties with **different levels of digital connectivity readiness** may receive the same star rating, particularly where overall scores lie close to the lower or upper range of score for any Star level. For example, a property scoring 56 and another property scoring 70 would both be awarded a 3-Star rating, despite a difference of 14 in overall score. Similarly, a property scoring 71 and another scoring 85 would both receive a 4-Star rating, even though the latter demonstrates significantly higher compliance across criteria and sub-criteria.

2.1.4. From the perspective of consumers, such outcomes may limit the ability to clearly distinguish between properties offering marginally different levels of digital connectivity experience. From the perspective of Property Managers, it may reduce

incentives for making **incremental improvements** beyond minimum threshold requirements.

2.2. **Proposed Amendment to the Regulation**

2.2.1. In order to address the above observation and provide a **more nuanced representation** of digital connectivity performance of the property, it is proposed to refine the rating scale by introducing **additional half-star levels** similar to the approach adopted by Bureau of Energy Efficiency (BEE) for assigning the energy efficiency levels for electrical appliances.

2.2.2. Under the proposed amendment, the digital connectivity rating levels shall be expanded from five levels to nine levels, as follows: 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, and 5 Stars

S. No	Score Range	Digital Connectivity Rating to be awarded
1	>=25-32	★
2	>32-40	★★⯪
3	>40-48	★★
4	>48-56	★★★⯪
5	>56-64	★★★
6	>64-72	★★★★⯪
7	>72-80	★★★★

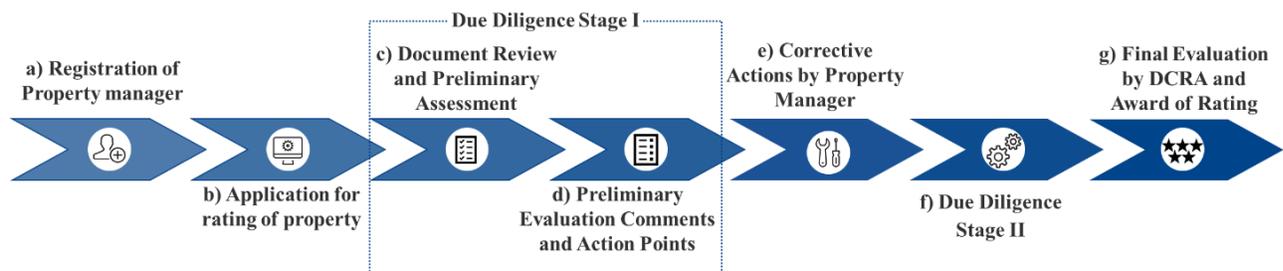| S. No	Score Range	Digital Connectivity Rating to be awarded
8	>80-88	★★★★⯪
9	More than 88	★★★★★

2.2.3. The proposed refinement does not involve any change to the existing criteria and sub-criteria; the scoring methodology; or the assessment process.

2.2.4. The revised rating scale is expected to enable clearer differentiation between properties with varying levels of digital connectivity, provide more meaningful and transparent information to consumers at the time of decision-making and encourage Property Managers to pursue continuous and incremental improvements in Digital Connectivity Infrastructure (DCI).

3. Proposed Amendment II: Rating of Properties Under Construction

3.1. Existing Rating Process as per the Rating Manual

3.1.1. Section 3.7 of the Rating Manual sets out a **structured, multi-stage rating process**, applicable to both constructed and under-construction properties. The key stages are explained below:

a) **Registration of Property Manager:** Property Manager register on the Digital Connectivity Rating Platform. Registration enables Property Managers to apply for rating for their properties.

b) **Application for rating of property:** The Property Manager applies for rating of its property and submits details and documents as per regulation and rating manual. This shall include details relating to the Property Manager and the property, such as property name, type, category, status, proof of ownership and ownership details, property address and area particulars, building layout plans including areas proposed for assessment, etc. Property Manager must also select DCRA for the assessment.

c) **Due Diligence Stage I (Document Review and Preliminary Assessment):** In this stage, the DCRA conducts Due Diligence Stage–I to assess whether the submitted information and documents meet the basic requirements for evaluation.

   i.   The DCRA reviews documents to verify completeness and consistency.

   ii. If additional information or clarification is required, the DCRA raises queries through the platform. The Property Manager is required to respond within the prescribed timelines.

   iii. For under-construction properties, the DCRA may visit the site at suitable stages to assess whether planned DCI is aligned with approved designs.

   iv. This stage is intended to ensure that the property is ready for detailed evaluation.

d) **Due Diligence Stage I (Preliminary Evaluation Comments and Action Points):** Based on Document Review and Preliminary Assessment, the DCRA

shares preliminary evaluation comments with the Property Manager. Action points, if any, are categorised as **Mandatory, Recommended and Optional** by DCRA and are communicated to Property Manager via Rating platform.

e) **Corrective Actions by Property Manager:** Property Manager shall take remedial actions on **mandatory points** to proceed for second stage of evaluation. Compliance with mandatory action points is required to proceed to the next stage. Property Managers are encouraged to also consider recommended and optional actions to achieve a higher rating. Once mandatory actions are completed, the Property Manager may request initiation of Due Diligence Stage–II.

f) **Due Diligence Stage II**: The DCRA conducts onsite assessment of deployed DCI against prescribed criteria and sub-criteria as per regulation 24 and 25. For under-construction properties, this stage commences **only after completion of DCI construction, testing and integration**.

g) **Final Evaluation by DCRA and Award of Rating**: The DCRA prepares the assessment report, updates scores for the property for respective criteria and sub-criteria as per methodology mentioned in Chapter 4 and 5 of Rating Manual, and issue the Digital Connectivity Rating certificate, which will be available for public verification.

3.1.2. The above process functions appropriately for constructed properties and **remains unchanged**.

3.1.3. As discussed in Chapter 2, stakeholders highlighted that a large number of properties are **marketed and sold during the construction phase**, often before physical completion.

3.1.4. The Rating Manual currently provides that, for under-construction properties, **Due Diligence Stage–II shall commence only after completion of Digital Connectivity Infrastructure (DCI) construction, testing and integration**, thereby ensuring that final ratings are based on actual on-ground assessment.

3.1.5. While the existing process ensures that final ratings are based on actual on-ground assessment, stakeholder interactions indicated that during the construction phase there is **no structured mechanism** through which the intended level of digital connectivity or target star rating can be communicated to the prospective customers.

3.1.6. It is further noted that during the construction phase:

a) Property Managers, despite planning DCI at the design stage, are unable to demonstrate such preparedness in a standardised and credible manner; and

b) consumers, who often make purchase decisions at this stage, have no visibility of the planned level of digital connectivity in properties.

3.1.7. Stakeholder interactions indicate that while the existing process safeguards assessment integrity, it does not address the practical need for **visibility and transparency during the construction phase**, when properties are actively marketed and sold.

3.2. Proposed Rating Process for Properties Under Construction

3.2.1. To address the above stakeholders' input, it is proposed to **adapt certain steps within the existing process**, particularly at the **application stage and Due Diligence Stage–I**, while retaining all other stages as prescribed in the Rating Manual.

3.2.2. The proposed process remains aligned with the Rating Manual. Only specific steps are supplemented; all remaining steps continue unchanged.

3.2.3. **Proposed Flow for Properties Under Construction:** The following diagram provides the process of rating for the properties under construction. Each stage of the process, including issue of certificate at the building plan stage and the final rating after the construction is complete, is discussed in the following paras.
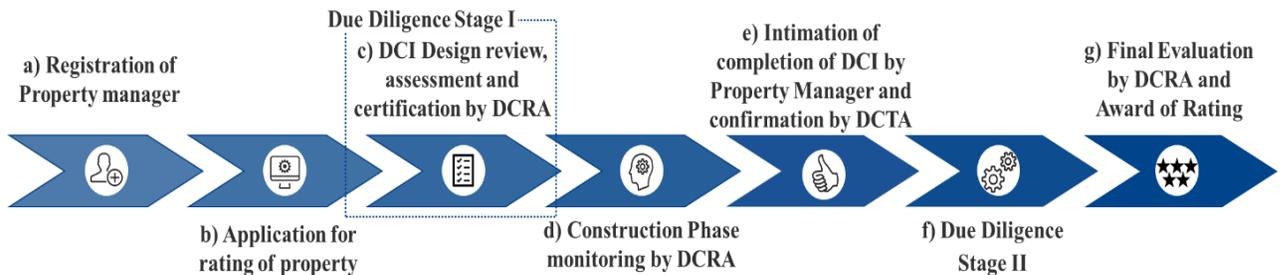
a) **Registration of Property Manager**: Property Manager register on the Digital Connectivity Rating Platform. Registration enables Property Managers to apply for rating for its properties.

b) **Application for rating of property**: Property Managers of under-construction properties may apply for a digital connectivity rating in accordance with the Regulations, **once all components of Digital Connectivity Infrastructure (DCI) (covering relevant criteria and sub-criteria as per regulations 24 and 25) have been planned and approved as part of the building plan and implementation design is ready**. In addition to the standard requirements under the step *"Application for Rating of Property"*, the Property Manager shall submit a **declaration specific to under-construction properties**, in the format provided at **Annexure-IV.** The declaration shall include the following:

i. the **target star rating** that the property intends to achieve.

ii. a rating **criterion-wise and sub-criterion-wise plan**, including:

a. the proposed measures and design provisions to achieve the declared target rating;

b. the **target score proposed against each applicable sub-criterion**; and

c. explanatory remarks mapping the proposed measures to approved design documents.

iii. The plan shall be supported by approved design documents and **relevant documentary evidence**, such as approved building plans for DCI, layouts, infrastructure schematics, and other supporting technical documents related to DCI.

iv. The Property Manager shall provide appropriate documentary evidence for each applicable sub-criterion, along with structured responses to specific questions, where prescribed, in order to enable the DCRA to assess the level of digital connectivity provisions at the design stage. Such responses shall clearly explain how the proposed Digital Connectivity Infrastructure complies with the requirements of the relevant criterion and sub-criterion.

In addition to the declaration and supporting documents specified above, Property Managers of under-construction properties shall submit all information, particulars, and documents as per regulation and rating manual. This shall include details relating to the Property Manager and the property, such as property name, type, category, status, proof of ownership and ownership details, property address and area particulars, building layout plans including areas proposed for assessment, and any other information or documents required for assessment of digital connectivity under the Regulations and the Rating Manual.

c) **Due Diligence Stage I (DCI Design Review, Assessment and Certification by DCRA):** For under-construction properties, the DCRA shall review the submitted declaration and documents to verify completeness, consistency, and alignment with the digital connectivity rating framework. This stage is limited to building plan and DCI design verification and preliminary evaluation, including site visits, where appropriate, to assess alignment with approved designs. During the review of the declaration, design documents, and supporting information submitted by the Property Manager:

i. the concerned Digital Connectivity Rating Agency (DCRA) shall assess the extent to which the proposed design-stage provisions in the property align with the applicable rating criteria and sub-criteria;

ii. In respect of those criteria and sub-criteria which involve parameters (such as network speed, coverage, no. of service providers etc.) that cannot be physically verified during the under-construction stage, the assessment shall be based on the structured responses provided in this declaration and the supporting documentary evidence submitted by the Property Manager. Such assessment shall be indicative in nature and subject to verification during Due Diligence Stage–II upon completion of construction and commissioning of Digital Connectivity Infrastructure.

iii. based on such assessment, the DCRA shall determine the appropriate design-stage star level corresponding to the planned Digital Connectivity Infrastructure; and

iv. the property shall be listed on the rating platform with the design-stage star level as assessed by the DCRA, along with an indication that the rating is based on design-stage evaluation;

v. Accordingly, a certificate indicating **"Designed for XX Stars",** as assessed by the DCRA, shall be issued to property manager;

vi. The **"Designed for XX Stars"** certificate will be indicative in nature, reflecting design-stage preparedness only, and shall not be treated as a final or provisional Digital Connectivity Rating;

vii. This step must be completed by DCRA within a reasonable period.

d) **Construction Phase Monitoring by DCRA:** As the deployment of Digital Connectivity Infrastructure progresses during construction, the concerned DCRA, at appropriate stages of construction, will monitor the development of DCI as per submitted design for obtaining rating for design stage and may also suggest corrective and improvement action points, if required, to Property Manager.

e) **Intimation of completion of DCI by Property Manager and Confirmation by DCRA:** Upon completion of construction and implementation as per DCI design, testing, and integration of Digital Connectivity Infrastructure, the Property Manager shall intimate the concerned DCRA through the rating platform. Based on such intimation, the DCRA shall verify whether the DCI has been implemented in accordance with the approved design-stage submissions and shall record its confirmation on the rating platform, clearly indicating any deviations, if observed, from the approved design.

f) **Due Diligence Stage II:** Upon completion of construction, testing, and integration of Digital Connectivity Infrastructure, and after confirmation by the concerned DCRA as recorded on the rating platform, the **Property Manager may submit a request for initiation of Due Diligence Stage II** through the rating platform. Due Diligence Stage II shall be initiated **only upon such request**

by the Property Manager and shall involve full on-site assessment by the DCRA in accordance with the Regulations and the Rating Manual as applicable to already constructed properties.

g) **Final Evaluation and Award of Rating:** Following Due Diligence Stage II, the DCRA prepares the assessment report, updates scores for the property for respective criteria and sub-criteria, and issues the final Digital Connectivity Rating certificate, which is available for public verification.

3.3. With these proposed additional steps, it is expected that both constructed properties and properties under construction shall be uniformly and transparently governed under the digital connectivity rating framework, from the building plan and design stage through to completion of construction and commissioning.

4. Proposed Amendment III: Categorisation of Property Types

4.1.1. As discussed in Chapter 2, it has been observed that certain property types exhibit digital connectivity usage patterns and infrastructure requirements that are more closely aligned with a different category than presently specified under Regulation 3.

4.1.2. The objective of categorisation under Regulation 3 is to ensure that appropriate and relevant rating criteria are applied for assessment of digital connectivity. Accordingly, alignment of property categories with applicability of bye laws, actual usage patterns and digital connectivity requirements is important for ensuring consistency and effectiveness of the rating framework.

4.2. Proposed Amendment

4.2.1. To better align property categorisation with digital connectivity requirements, the following amendments are proposed under Regulation 3:

(i) Multi-modal logistics parks should be moved from Category 'A' to Category 'B'.

(ii) Hospitals, Hotels, and Educational Institutions should be moved from Category 'B' to Category 'A'.

4.2.2. Revised table for categories of properties for evaluation and assessment of digital connectivity is as follows:

Sl. No.	Classification	Category	Type of Property
1.	Residential	A	Apartments, independent houses, gated communities or societies, etc.
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, convention centres, **Hospitals, Hotels, Educational Institutions**, etc.
4.	Other private or public areas	B	Airport, Bus Station, Railway Station, **multi-modal logistic parks**, 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, Metro corridors etc.

5. Proposed Amendment IV: Optional Digital Connectivity Audit

5.1. Background

5.1.1. As discussed in Chapter 2, the Authority has noted that there may be scenarios where a Property Manager may wish to review the level of Digital Connectivity in a property for internal evaluation and improvement purposes, without immediately applying for a Digital Connectivity Rating under the Regulations.

5.1.2. Inputs received from Property Managers indicate that, in certain cases, Property Managers may prefer to first understand the present status of digital connectivity, identify gaps, and undertake corrective actions before opting for a formal rating assessment, if required.

5.1.3. The Authority is of the view that facilitating such optional improvement-oriented audit may support wider adoption of digital connectivity best practices and encourage Property Managers to proactively enhance Digital Connectivity Infrastructure.

5.2. Proposed Approach

5.2.1. It is proposed to enable optional digital connectivity audit, whereby a Property Manager may, on a voluntary basis, engage a registered Digital Connectivity Rating Agency (DCRA) to undertake an audit of the property's digital connectivity based on the criteria and sub-criteria specified in the Rating Manual and Regulation.

5.2.2. For the limited purpose of facilitating initiation of such audit and enabling transparency in timelines, a simple electronic form may be made available on the Rating Platform. The form shall capture basic details of the Property Manager and the property, along with selection of registered DCRA.

5.2.3. Upon submission of such request by the Property Manager, one or more DCRA(s), as selected by the Property Manager, shall be notified through the platform. Thereafter, the Property Manager and the selected DCRA may mutually agree on the scope of audit, timelines for completion, and fee structure.

5.2.4. Once mutual agreement is reached, the DCRA shall update its acceptance of the audit request on the platform along with the agreed date of completion of the audit.

5.2.5. The DCRA shall update the status of such audit on the platform upon completion. The role of the platform shall be limited to facilitation of initiation and status tracking only.

5.2.6. The outcome of an Optional Digital Connectivity Audit may include a report indicating the present status of Digital Connectivity, identification of gaps against the applicable criteria and sub-criteria as per Rating Manual, and actionable recommendations for improvement. Any indicative score or indicative star rating level, if provided, shall be non-binding and for internal reference only.

5.2.7. The digital connectivity audit report prepared by the DCRA shall be shared directly with the Property Manager. Refer Annexure-V of this consultation paper for indicative template for Optional Digital Connectivity Audit Report.

5.2.8. Such optional audit shall not create any right, expectation, or entitlement with respect to award of a Digital Connectivity Rating.

5.2.9. Participation in Optional Digital Connectivity Audit shall not be a prerequisite for applying for a Digital Connectivity Rating, nor shall it have any bearing on the outcome of a rating assessment undertaken under the Regulation.

5.2.10. High-level workflow for Optional Digital Connectivity Audit is as follows:

a) Submission of Audit Request | b) Notification to DCRA(s) and submission of proposals to PM | c) Mutual Agreement | d) Acceptance Update | e) Conduct of Audit | f) Report Sharing | g) Status Update

a) **Submission of Audit Request:** The Property Manager submits a Optional Digital Connectivity Audit request through a simple electronic form on the rating platform capturing basic property manager and property details along with selection of DCRA.

b) **Notification to DCRA(s) and submission of proposals to Property Manager:** The shortlisted DCRA(s) receives intimation of the audit request through the platform. The concerned DCRA(s) will do the due diligence and submit their proposals directly to the Property Manager. DCRA may also request for on-site visit if required.

c) **Mutual Agreement:** The Property Manager and the selected DCRA mutually agree on scope of audit, timelines, and fee. The Property Manager shall update the selected DCRA on the platform.

d) **Acceptance Update:** The DCRA updates acceptance of the audit request along with agreed date of completion.

e) **Conduct of Audit:** The DCRA undertakes assessment of Digital Connectivity against applicable criteria and sub-criteria, including on-site assessment, as per rating manual and prepare audit report.

f) **Report Sharing:** The report is shared directly between the DCRA and the Property Manager.

g) Status Update: The DCRA updates the status of audit as 'completed' on the platform for monitoring purposes.

6. **Summary of Proposed Amendments** : Based on the analysis set out above, the Authority has proposed Amendments relating to:

(i)   refinement of the Star Rating Levels through introduction of half-star levels for better differentiation

(ii)   structured design-stage assessment mechanism for properties under construction, including issuance of an indicative "Designed for XX Stars" certificate

(iii)   realignment of certain property types between Category 'A' and Category 'B' and

(iv)   recognition of an Optional Digital Connectivity Audit mechanism for evaluation and improvement purposes.

Additionally, certain clarifications are proposed under the Code of Conduct for DCRAs to further strengthen impartiality and independence in the rating process. The Draft Regulation incorporating the proposed amendments is placed at Annexure-II. The Draft Rating manual incorporating the proposed amendments is placed in Annexure-III. In addition to comments on the proposed amendments, stakeholders are also invited to submit their comments, feedback, or suggestions on any other provisions of the Regulations, in the format prescribed in Annexure-I.

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Chapter 4: Proposed Amendments in Regulation

Based on the background set out in Chapter 1, the stakeholder inputs and Authority's assessment discussed in Chapter 2, and the proposed changes explained in Chapter 3, the details of proposed amendments in the Regulations are as follows:

TO BE PUBLISHED IN THE GAZETTE OF INDIA
EXTRAORDINARY PART III SECTION

TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION
NEW DELHI, the <mark>Date XX Month, 2026</mark>

F. No C-2/3/(2)/2021-QoS: In exercise of the powers conferred by section 36, read with sub-clauses (i) and (v) of clause (b), clause (c) and clause (d) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations further to amend the Rating of Properties for Digital Connectivity Regulations, 2024 (7 of 2024), namely:-

RATING OF PROPERTIES FOR DIGITAL CONNECTIVITY (FIRST AMENDMENT)
REGULATIONS, 2026 (XX of 2026)

1. **Short title, extent and commencement.**— (1) These regulations may be called the Rating of Properties for Digital Connectivity (First Amendment) Regulations, 2026.

   (2) These regulations shall come into force with effect from XX.YY.2026.

2. In regulation 3 of the Rating of Properties for Digital Connectivity Regulations, 2024 (7 of 2024) (hereinafter referred to as the principal regulations), in sub-regulation (1), in the table, under the column 'Type of Property'-

(i) against serial number (3), for the character "Commercial office complex, shopping malls, industrial estates, SEZs, multi-modal logistic parks, convention centres, etc.", the character "Commercial office complex, shopping malls, industrial estates, SEZs, convention centres, Hospitals, Hotels, Educational Institutions, etc.", shall be substituted;

(ii) against serial number (4), for the character "Airport, Bus Station, Railway Station, Hospitals, Hotels, Educational Institutions, etc.", the character "Airport, Bus Station, Railway Station, multi-modal logistic parks, etc.", shall be substituted;

(iii) against serial number (6), for the character "Expressways, Highways, Railways routes, etc.", the character "Expressways, Highways, Railways routes, Metro corridors etc.", shall be substituted;

3. In regulation 14 of the principal regulations, in sub-regulation (1), the following provisos shall be inserted, namely-

"*Provided that an application for rating of properties, under construction, shall be accompanied with approved design documents and other relevant details as may be specified by the Authority.*

Provided further that the property manager may also undertake optional digital connectivity audit through the registered DCRAs without applying for rating for digital connectivity."

4. In regulation 24 of the principal regulations, in sub-regulation (1), for Note (ii), the following clause shall be substituted, namely-

"For the purposes of rating for digital connectivity, MBBL issued by Ministry of Housing and Urban Affairs (MoHUA) shall be referred in cases where Building Byelaws of Cities/State or Union Territory do not have provisions for digital connectivity infrastructure."

5. In regulation 26 of the principal regulations, in sub-regulation (2), for table, the following table shall be substituted, namely-

S. No	Score Range	Digital Connectivity Rating to be awarded
1	>=25-32	★
2	>32-40	★★
3	>40-48	★★
4	>48-56	★★★
5	>56-64	★★★
6	>64-72	★★★★
7	>72-80	★★★★
8	>80-88	★★★★★
9	More than 88	★★★★★

6. In Schedule-I of the principal regulations, for item (i), the following item shall be substituted, namely-

"(i)   **Impartiality and independence**: DCRA shall remain impartial and independent during digital connectivity assessment and entire rating process. DCRA should not have any financial interest or ownership or operational interests in the property under evaluation and assessment. To avoid any conflict of interest, any DCRA providing DCI services shall not undertake digital connectivity assessment of properties where another DCRA has provided DCI services. DCRA shall establish policy and procedures for reviewing the work of its agents/employees to ensure independence of evaluation and assessment without external influences."

Secretary, TRAI

Note.1. - The principal regulations were published in the Gazette of India, Extraordinary, Part III, Section 4 dated the 25th October 2024 vide notification number No. C-2/3/(2)/2021-QoS dated the 25th October 2024

<center>***</center>

Chapter 5: Proposed Amendments in Rating Manual

Based on the background set out in Chapter 1, the stakeholder inputs and Authority's assessment discussed in Chapter 2, and the proposed changes explained in Chapter 3, the details of proposed amendments in respective chapter of the Rating Manual are as follows:

1. **Proposed Amendments in Chapter 1 of Rating Manual:**

   (a) In **Section 1.3. Background and Purpose**, following shall be inserted after first paragraph:

   "The framework also recognizes the importance of enabling visibility of planned digital connectivity at the design and construction stages of properties, while ensuring that final ratings continue to be awarded based on actual on-ground assessment."

   (b) In **Section 1.4. Digital Connectivity Rating Framework**, under **sub-section i. Standardized Process**, following shall be inserted in first paragraph:

   "The standardized process also provides for assessment of digital connectivity at different stages of property development, as specified in the regulations."

2. **Proposed Amendments in Chapter 2 of Rating Manual:**

   (a) In **Section 2.1. Digital Connectivity Rating Agency (DCRA)**, following shall be inserted after **point vii.**:

   "In addition to the above, a DCRA may, on a voluntary basis and upon request by a Property Manager, undertake an Optional Digital Connectivity Audit for internal review and improvement purposes for a property, outside the formal rating process and without award of any Digital Connectivity Rating."

   (b) In **Section 2.2. Property Manager (PM)**, following shall be inserted under **i. Application for ratings** after **point c.**:

"d. For under-construction properties, the Property Manager shall also submit a declaration and supporting design-stage documents, as prescribed by the Authority."

(c) In **Section 2.2. Property Manager (PM)**, following shall be inserted after **v. Customer communication and tenant engagement**:

"A Property Manager may, at its discretion, engage a registered Digital Connectivity Rating Agency (DCRA) for an Optional Digital Connectivity Audit of the property for the purpose of identifying gaps and undertaking improvements in Digital Connectivity Infrastructure, without applying for a Digital Connectivity Rating under the Regulations."

3. **Proposed Amendments in Chapter 3 of Rating Manual:**

(a) In **Section 3.6. Classification of Properties for Rating**, following shall be the amendments in **Table 3.1 Classification of Properties for Rating of digital connectivity:**

(i) At **serial number 3. Commercial Establishments**, properties in **"Type of Property"** column shall be substituted as *"Commercial office complex, shopping malls, industrial estates, SEZs, convention centres, Hospitals, Hotels, Educational Institutions, etc."*

(ii) At **serial number 4. Other private or public areas**, properties in **"Type of Property"** column shall be substituted as *"Airport, Bus Station, Railway Station, multi-modal logistic parks, etc."*

(iii) At **serial number 6. Transport corridors**, properties in **"Type of Property"** column shall be substituted as *"Expressways, Highways, Railways routes, Metro corridors etc."*

(b) In **Section 3.7. Rating Process for Constructed Properties**, following figure shall be inserted as **Figure 3.1: High Level Rating Workflow for Constructed Properties** after first paragraph:
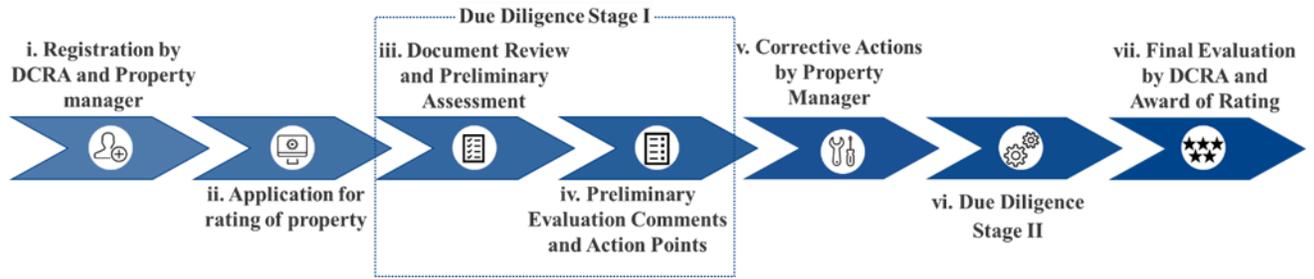
(c) After **Section 3.7. "Rating Process for Constructed Properties", a new Section 3.8. "Rating Process for Properties Under Construction"**, shall be inserted:

"3.8. Rating Process for Properties Under Construction

The rating process for digital connectivity in properties under construction follows a structured, multi-stage evaluation approach to ensure transparency, consistency, and reliability in assessment, while preserving the integrity of final rating outcomes. The framework enables design-stage assessment of Digital Connectivity Infrastructure (DCI) readiness during the construction phase and provides for final evaluation based on on-ground verification after completion of construction. 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:
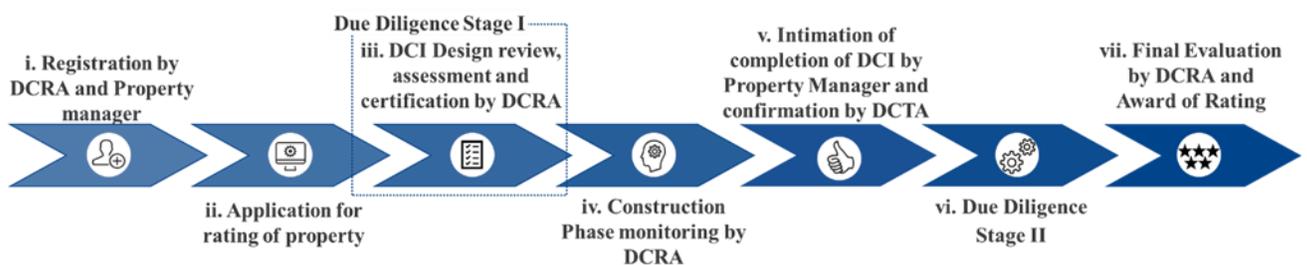

Figure 3.2: High Level Rating Workflow for Properties Under Construction

i.   ***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. ***Application for Rating of Properties:***

a. *Property Managers seeking rating for the property under construction shall submit an online application in accordance with regulations, **once all components of Digital Connectivity Infrastructure (DCI) (covering relevant criteria and sub-criteria as per regulations 24 and 25) have been planned and approved as part of the building plan and implementation design is ready.***

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 platform.*

c. *In addition to the standard requirements, the Property Manager shall submit a declaration specific to under-construction properties, in format specified by the Authority. The declaration shall include the following:*

   I. *the **target star rating** that the property intends to achieve.*

   II. *a rating **criterion-wise and sub-criterion-wise plan**, including:*

   (a) *the proposed measures and design provisions to achieve the declared target rating;*

   (b) *the target score proposed against each applicable sub-criterion; and*

(c) *explanatory remarks mapping the proposed measures to approved design documents.*

III. *The plan shall be supported by approved design documents and* ***relevant documentary evidence***, *such as approved building plans for DCI, layouts, infrastructure schematics, and other supporting technical documents related to DCI.*

IV. *The Property Manager shall provide appropriate documentary evidence for each applicable sub-criterion, along with structured responses to specific questions, where prescribed, in order to enable the DCRA to assess the level of digital connectivity provisions at the design stage. Such responses shall clearly explain how the proposed Digital Connectivity Infrastructure complies with the requirements of the relevant criterion and sub-criterion.*

d. *In addition to the declaration and supporting documents specified above, Property Managers of under-construction properties shall submit all information, particulars, and documents as per regulation and rating manual. This shall include details relating to the Property Manager and the property, such as property name, type, category, status, proof of ownership and ownership details, property address and area particulars, building layout plans including areas proposed for assessment, and any other information or documents required for assessment of digital connectivity under the Regulations and the Rating Manual.*

e. *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.*

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

g. *The details of the maximum chargeable fee (MCF), to be charged by different DCRAs, will be available on the rating platform.*

h. *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 (DCI Design Review, Assessment and Certification by DCRA):***

a. *For under-construction properties, the DCRA shall review the submitted declaration and documents to verify completeness, consistency, and alignment with the digital connectivity rating framework.*

b. *This stage is limited to building plan and DCI design verification and preliminary evaluation, including site visits, where appropriate, to assess alignment with approved designs.*

c. *During the review of the declaration, design documents, and supporting information submitted by the Property Manager:*

I. *The concerned Digital Connectivity Rating Agency (DCRA) shall assess the extent to which the proposed design-stage provisions in the property align with the applicable rating criteria and sub-criteria;*

II. *In respect of those criteria and sub-criteria which involve parameters (such as network speed, coverage, no. of service providers etc.) that cannot be physically verified during the under-construction stage, the assessment shall be based on the structured responses provided in this declaration and the supporting documentary evidence submitted by the Property Manager. Such assessment shall be indicative in nature and subject to verification during Due Diligence Stage–II upon*

completion of construction and commissioning of Digital Connectivity Infrastructure.

III.   *Based on such assessment, the DCRA shall determine the appropriate design-stage star level corresponding to the planned Digital Connectivity Infrastructure; and*

IV.   *The property shall be listed on the rating platform with the design-stage star level as assessed by the DCRA, along with an indication that the rating is based on design-stage evaluation.*

V.   *Accordingly, a certificate indicating* **"Designed for XX Stars"***, as assessed by the DCRA, shall be issued to property manager*

VI.   *The* **"Designed for XX Stars"** *certificate will be indicative in nature, reflecting design-stage preparedness only, and shall not be treated as a final or provisional Digital Connectivity Rating.*

VII.   *This step must be completed by DCRA within a reasonable period*

iv.   **Construction Phase Monitoring by DCRA:**

a.   *As the deployment of Digital Connectivity Infrastructure progresses during construction, the concerned DCRA, at appropriate stages of construction, will monitor the development of DCI as per submitted design for obtaining rating for design stage and may also suggest corrective and improvement action points, if required, to Property Manager.*

v.   **Intimation of completion of DCI by Property Manager and Confirmation by DCRA:**

a.   *Upon completion of construction and implementation as per DCI design, testing, and integration of Digital Connectivity Infrastructure, the Property Manager shall intimate the concerned DCRA through the rating platform.*

b.   *Based on such intimation, the DCRA shall verify whether the DCI has been implemented in accordance with the approved design-stage submissions and shall record its confirmation on the rating platform, clearly indicating any deviations, if observed, from the approved design.*

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

a.   *Upon completion of construction, testing, and integration of Digital Connectivity Infrastructure, and after confirmation by the concerned DCRA as recorded on the rating platform, the Property Manager may submit a request for initiation of Due Diligence Stage II through the rating platform. Due Diligence Stage II shall be initiated only upon such request by the Property Manager.*

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 is provided in Chapter 4 for properties of category 'A' and Chapter 5 for properties of category 'B' 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.*

vii.   ***Final Evaluation by DCRA and Award of Rating:***

a.   ***Final Evaluation by DCRA:***

I.   *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.

II. *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' and Chapter 5 for properties of category 'B'.*

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

IV. *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.*

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

b. **Award of Rating:**

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

II. *The Property Manager will be able to download the rating certificate through their registered account on the rating platform 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.''*

(d) After **Section 3.8. "Rating Process for Properties Under Construction", a new Section 3.9. "Optional Digital Connectivity Audit"**, shall be inserted:

*"3.9. **Optional Digital Connectivity Audit***

There may be scenarios where a Property Manager may wish to review the level of Digital Connectivity Infrastructure (DCI) in a property for purpose of identifying gaps and undertaking improvements, without applying for a Digital Connectivity Rating. Additionally, once a rating is awarded, it becomes publicly visible, and therefore some Property Managers prefer to first identify gaps and undertake improvements before opting for a formal rating assessment.

In such situations, Property Managers may find value in obtaining an audit of the existing digital connectivity infrastructure against the criteria and sub-criteria prescribed in the Rating Manual, primarily for understanding the present status and areas requiring improvement.

In such cases, Property Manager may, on a voluntary basis, engage a registered Digital Connectivity Rating Agency (DCRA) to undertake an audit of the property's digital connectivity based on the criteria and sub-criteria specified in the Regulation and this Rating Manual.

For the limited purpose of facilitating initiation of such audit and enabling transparency in timelines, a simple electronic form may be made available on the Rating Platform. The form shall capture basic details of the Property Manager and the property, along with selection of a registered DCRA.

Upon submission of such request by the Property Manager, one or more DCRA(s), as selected by Property Manager, shall be notified through the platform. Thereafter, the Property Manager and the selected DCRA may mutually agree on the scope of audit, timelines for completion, and fee structure.

Once mutual agreement is reached, the DCRA shall update its acceptance of the audit request on the platform along with the agreed date of completion of the audit.

The DCRA shall update the status of such audit on the platform upon completion. The role of the platform shall be limited to facilitation of initiation and status tracking only.

The outcome of an Optional Digital Connectivity Audit may include a report indicating the present status of Digital Connectivity, identification of gaps against the applicable criteria and sub-criteria as per Rating Manual, and actionable recommendations for improvement. Any indicative score or indicative star rating level, if provided, shall be non-binding and for internal reference only.

The digital connectivity audit report prepared by the DCRA shall be shared directly with the Property Manager.

Such optional audit shall not create any right, expectation, or entitlement with respect to award of a Digital Connectivity Rating.

Participation in an Optional Digital Connectivity Audit shall not be a prerequisite for applying for a Digital Connectivity Rating, nor shall it have any bearing on the outcome of a rating assessment undertaken under the Regulation.

High-level workflow for Optional Digital Connectivity Audit is as:

Figure 3.3: High Level Workflow for Optional Digital Connectivity Audit

i. **Submission of Audit Request:** *The Property Manager submits a Optional Digital Connectivity Audit request through a simple electronic form on the rating platform capturing basic property manager and property details along with selection of DCRA.*

ii. **Notification to DCRA(s) and submission of proposals to Property Manager:** *The shortlisted DCRA(s) receives intimation of the audit request through the platform. The concerned DCRA(s) will do the due diligence and submit their proposals directly to Property Manager. DCRA may also request for on-site visit if required.*

iii. ***Mutual Agreement:*** *The Property Manager and the selected DCRA mutually agree on scope of audit, timelines, and fee. Property Manager shall update the selected DCRA on the platform.*

iv. ***Acceptance Update:*** *The DCRA updates acceptance of the audit request along with agreed date of completion.*

v. ***Conduct of Audit:*** *The DCRA undertakes assessment of Digital Connectivity against applicable criteria and sub-criteria, including on-site assessment, as per this rating manual and prepare audit report.*

vi. ***Report Sharing:*** *The report is shared directly between the DCRA and the Property Manager.*

vii. ***Status Update:*** *The DCRA updates the status of audit as 'completed' on the platform for monitoring purposes.''*

4. **Proposed Amendments in Chapter 6 of Rating Manual:**

   (a) In **Section 6.1. Classification of Ratings**, **Table 6.1 Rating Scorecard** shall be substituted as:

S. No.	*Score Range*	*Digital Connectivity Rating to be awarded*
1.	*>=25-32*	★
2.	*>32-40*	★★
3.	*>40-48*	★★
4.	*>48-56*	★★★
5.	*>56-64*	★★★
6.	*>64-72*	★★★★
7.	*>72-80*	★★★★

S. No.	Score Range	Digital Connectivity Rating to be awarded
8.	>80-88	★★★★⯨
9.	More than 88	★★★★★

5. Proposed Amendments in Chapter 11 of Rating Manual:

(a) In **Section 11.1. Frequently Asked Questions (FAQ)**, response to **FAQ xiv.** shall be substituted as:

"xiv. What are the key provisions that the DCRA must evaluate to assess compliance with the applicable Model Building Bye-Laws (MBBL) and National Building Code (NBC)?

The DCRA needs to evaluate whether the property's Digital Connectivity Infrastructure (DCI) has been provided in the property as per the requirement of the latest applicable National Building Code (NBC) issued by Bureau of Indian Standards (BIS) and Model Building Bye-Laws (MBBL) issued by Ministry of Housing and Urban Affairs, Government of India (MoHUA).

As per Regulation 24, for the purposes of rating for digital connectivity, MBBL issued by MoHUA shall be referred in cases where Building Byelaws of Cities/State or Union Territory do not have provisions for digital connectivity infrastructure.

For clarity and uniformity in assessment, the Authority has published a separate "Checklist for compliance to MBBL and NBC in the Manual under Rating of Properties for Digital Connectivity Regulations, 2024". The DCRA shall undertake evaluation in accordance with the items and compliance impact specified in the said Checklist, as updated from time to time."

(b) In **Section 11.1. Frequently Asked Questions (FAQ)**, following FAQs shall be inserted:

"xviii. **What is the objective of introducing design-stage assessment for properties under construction?**

The objective of introducing design-stage assessments for properties under construction is to provide structured visibility of Digital Connectivity Infrastructure (DCI) preparedness at the planning and construction stage, when properties are often marketed and sold. This mechanism enables Property Managers to integrate digital connectivity requirements into the building design in a systematic manner and allows prospective buyers and tenants to understand the intended level of digital connectivity.

xix. **Can the "Designed for XX Stars" certificate be used in marketing and promotional materials?**

Yes, the Property Manager may use the "Designed for XX Stars" certificate for marketing purposes during the construction phase, provided it is clearly represented as a design-stage assessment only. The certificate shall not be presented as a final Digital Connectivity Rating and shall not mislead consumers regarding the final rating outcome.

xx. **Will the design-stage star level be publicly visible on the rating platform?**

Yes. The design-stage star level assessed by the DCRA shall be displayed on the rating platform with a clear indication that it is based on design-stage evaluation and not a final Digital Connectivity Rating. This ensures transparency while preserving clarity between design-stage preparedness and final rating.

xxi. **Can the target star rating declared by the Property Manager guarantee the final rating?**

No. The target star rating declared by the Property Manager at the application stage represents an intended level of digital connectivity preparedness. The final Digital Connectivity Rating shall be determined solely on the basis of on-ground assessment conducted during Due Diligence

Stage–II after completion of construction and implementation of Digital Connectivity Infrastructure.

xxii. **What is the objective of introducing the Optional Digital Connectivity Audit?**

The objective of introducing the Optional Digital Connectivity Audit is to provide Property Managers with an opportunity to assess the present level of Digital Connectivity Infrastructure (DCI) in their property for internal evaluation and improvement purposes, without immediately applying for a Digital Connectivity Rating under the Regulations. This mechanism is intended to encourage proactive enhancement of digital connectivity and wider adoption of best practices, while preserving the integrity of the formal rating framework.

xxiii. **Is the Optional Digital Connectivity Audit mandatory before applying for a Digital Connectivity Rating?**

No. Participation in an Optional Digital Connectivity Audit is entirely voluntary. It is not a prerequisite for applying for a Digital Connectivity Rating and shall have no bearing on the outcome of any rating assessment conducted under the Regulations.

xxiv. **Does the Optional Digital Connectivity Audit result in a rating or certificate under the Regulation?**

No. The Optional Digital Connectivity Audit does not constitute a Digital Connectivity Rating, provisional rating, interim rating, or certification under the Regulations. It is conducted outside the formal rating framework and is intended solely for internal use by the Property Manager.

xxv. **What is the role of the Rating platform in the Optional Digital Connectivity Audit?**

The Rating Platform facilitates only the initiation of the audit request and enables status tracking for transparency in timelines. The platform does not

evaluate, validate, review, or endorse the audit findings. The audit engagement, scope, timelines, and fee structure are mutually agreed between the Property Manager and the selected DCRA.

xxvi. ***Can the indicative score or indicative star level mentioned in the audit report be used for marketing or public communication?***

No. Any indicative score or indicative star level provided in the audit report is non-binding and intended solely for internal reference. It shall not be represented as a Digital Connectivity Rating under the Regulations and shall not be used in marketing, promotional materials, or public communication as an official rating."

(c) In **Section 11.5. Template for declaration of maximum chargeable fee by DCRA (As per regulation)**, following shall be the amendments**:**

(iv) At **serial number 3. Commercial Establishments**, properties in **"Type of Property"** column shall be substituted as *"Commercial office complex, shopping malls, industrial estates, SEZs, convention centres, Hospitals, Hotels, Educational Institutions, etc."*

(v) At **serial number 4. Other private or public areas**, properties in **"Type of Property"** column shall be substituted as *"Airport, Bus Station, Railway Station, multi-modal logistic parks, etc."*

(vi) At **serial number 6. Transport corridors**, properties in **"Type of Property"** column shall be substituted as *"Expressways, Highways, Railways routes, Metro corridors etc."*

***

Annexure-I

Template for submitting Comments or Feedback

[Comments on each regulation or any other aspect of the *Rating of Properties for Digital Connectivity Regulations, 2024* or rating manual may be stated in a fresh row. Comments should include justification and, wherever applicable, suggestions for modified or additional wordings.]

Name of the Commentator/ Organization: _____

S. No.	Regulation No./ Rating Manual reference / Subject	Comments/ Suggested modified wordings	Justification for Comments/ Suggestions
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

NOTE:

1. Stakeholders may insert additional rows, as required.
2. Where a comment does not pertain to a specific regulation number or specific reference of rating manual, stakeholders may indicate the **relevant subject, provision, or general comment** in the "Regulation No./ Subject" column.
3. Stakeholders are encouraged to provide **clear justification** and, wherever feasible, **suggested revised wording** to facilitate examination of the comments.

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Draft Regulation with Amendments

The draft regulation with amendments is as follows with amendments highlighted in yellow colour for consultation.

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TO BE PUBLISHED IN THE GAZETTE OF INDIA
EXTRAORDINARY PART III SECTION

TELECOM REGULATORY AUTHORITY OF INDIA
NOTIFICATION

NEW DELHI, the ==Date XX Month, 2026==

F. No C-2/3/(2)/2021-QoS: In exercise of the powers conferred by section 36, read with sub-clauses (i) and (v) of clause (b), clause (c) and clause (d) of sub-section (1) of section 11, of the Telecom Regulatory Authority of India Act, 1997 (24 of 1997), the Telecom Regulatory Authority of India hereby makes the following regulations, namely:-

RATING OF PROPERTIES FOR DIGITAL CONNECTIVITY
REGULATIONS, 2024 (==xx== of 2026)

SECTION-I
PRELIMINARY

1. **Short title, extent and commencement.**— (1) These regulations may be called the Rating of Properties for Digital Connectivity Regulations, 2024.

   (2) These regulations shall apply to -

   (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, who may evaluate and award ratings for property under these regulations; and

   (iii) the service providers, who may enter into an arrangement with the property manager for development or access of digital connectivity or digital connectivity infrastructure.

   (3) They shall come into force from ==XX.YY.2026==.

2. **Definitions. —** (1) In these regulations, unless the context otherwise requires, --

   (a) **"Act"** means the Telecom Regulatory Authority of India Act, 1997 (24 of 1997);

   (b) **"Authority"** means the Telecom Regulatory Authority of India established under sub- section (1) of section 3 of the Telecom Regulatory Authority of India Act, 1997;

(c) **"digital connectivity"** means the connectivity made available to the users to deliver telecommunication services using wireless or wireline medium;

(d) **"digital connectivity infrastructure" or "DCI"** means passive and active elements, which include any apparatus, appliance, instrument, equipment and system used or capable of extending seamless digital connectivity:

Explanation: *All infrastructure required for establishing Wireless or Wireline Access Networks such as Radio Access Networks (RAN) and Wi-Fi systems, and Transmission Links Interface, Duct Space, Optical Fiber, Poles, Towers, Feeder cable, Antenna, Base Station, In-Building Solutions (IBS), Distributed Antenna System (DAS), or any other equipment to be used for the provision of digital connectivity, may be part of DCI, however, it shall not include core network elements;*

(e) **"digital connectivity rating agency"** or **"DCRA"** means an eligible entity duly empaneled with the Authority on rating platform for rating of properties for digital connectivity under these regulations;

(f) **"entity"** means a company registered under the Companies Act, 2013 (18 of 2013) or a registered LLP firm;

(g) "**person**" means an individual, any company or association or body of individuals, whether incorporated or not, by whatsoever name called or referred to;

(h) **"property"** means the properties provided under regulation 3 and includes buildings and their surroundings and areas under construction;

(i) **"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;

(j) **"public Wi-Fi network"** means family of wireless network protocols commonly used for extending wireless internet access to general public in a property;

(k) **"Quality of Service"** or **"QoS"** means main indicator of the performance of a telecommunication network and the degree to which such network conforms to the standards of such quality of service as specified in the applicable regulations;

(l) **"rating"** means rating of digital connectivity in the property as assigned by DCRA and expressed in the form of specified symbols, as provided in these regulations;

(m) **"regulations"** means the Rating of Properties for Digital Connectivity Regulations, 2024;

(n) "**rating platform**" means the information technology system and associated applications set up or authorized by the Authority for the purpose of managing rating of properties for digital connectivity as per provisions of the regulations:

Note:- The Authority shall notify the date on which the rating platform shall be made live. Further, the Authority may, till the development of online rating platform, provide an alternate mechanism for rating of property;

(o) **"schedule"** means the schedules appended to the regulations;

(p) **"service provider"** means any service provider licensed under section 4 of the Indian Telegraph Act, 1885 or granted authorization under the Telecommunications Act, 2023, to provide telecommunication service;

(q) **"telecommunication network"** means telecommunication network as defined in the Telecommunications Act, 2023;

(r) **"telecommunication service"** means telecommunication service as defined in the Telecommunications Act, 2023;

(2) Words and expressions used in these regulations but not defined in the regulations, but defined in the Act or the rules and other regulations made thereunder or in the Telecommunications Act, 2023 or in the license or authorization granted thereunder, shall have the meanings respectively assigned to them in the Act, or the rules or the regulation or the Telecommunications Act, 2023 or in the license or authorization granted under relevant Act, as the case may be.

SECTION II
CLASSIFICATION OF PROPERTIES FOR RATING

3. **Categories of properties for evaluation and assessment of digital connectivity.–** (1) The properties shall, for the purpose of rating for digital connectivity, be classified under the following categories:-

Sl. No.	Classification	Category	Type of Property
1.	Residential	A	Apartments, independent houses, gated communities or societies, etc.
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, convention centres, Hospitals, Hotels, Educational Institutions, etc.
4.	Other private or public areas	B	Airport, Bus Station, Railway Station, multi-modal logistic parks, 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, Metro corridors etc.

SECTION III
REGISTRATION OF DIGITAL CONNECTIVITY RATING AGENCY

4. **Application for registration.–** (1) Any entity, fulfilling the eligibility criteria under regulation 5 and intending to commence activity as DCRA under these 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.

(2) An application for registration, which is not complete in all respects or does not conform to the eligibility criteria specified under regulation 5 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 consider appropriate, but such extended time shall not exceed thirty days.

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

5. **Eligibility Criteria.–** (1) An entity shall be eligible for registration as DCRA with the Authority under regulation 4, if it -

a)   is registered as a company under the Companies Act, 2013 (18 of 2013) or is a registered LLP firm;

b)   has minimum two years' experience in setting up in-building solutions or assessment of quality of service of telecommunication networks or installation or maintenance of telecommunication networks;

c)   has, in its employment persons having adequate professional experience in telecom, civil and electrical domain, to the satisfaction of the Authority, to meet obligations under the regulations and the rating framework;

d)   has valid ISO certified quality management system in its organization or submits an undertaking to get it within one year of the grant of registration.

6.   **Grant of registration and listing on rating platform.–** (1) The Authority shall, on being satisfied that the applicant meets the eligibility criteria under regulation 5, grant registration to the applicant on the rating platform for a period of five years.

(2)   The registration granted under sub-regulation (1) 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 an order or direction.

(3)   The registration granted under sub-regulation (1) 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, and such registration shall not confer any right upon the DCRA for assignment of work for rating of property.

(4)   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:

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

(5)   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:

   Provided that 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.

7.   **Conditions of registration of DCRA.** – (1) The registration of DCRA shall be subject to the following conditions, namely:-

(i)   DCRA shall comply with the provisions of the regulations and the guidelines, orders, directions and instructions issued thereunder by the Authority, from time to time.

(ii) where any information or particulars furnished to the Authority by DCRA has undergone change subsequent to submission of the application for registration or grant of registration, DCRA shall inform the Authority of such change within a period of sixty days;

(iii) where DCRA proposes change in its management, it shall provide prior intimation to the Authority, at least fifteen days prior to the date of effect of such change, demonstrating its capability and commitment to continue to work as DCRA, failing which the registration of DCRA may be cancelled.

(iv) DCRA shall continue to have a valid ISO certificate for quality management and have adequate number of professionals with experience in telecom, civil and electrical domain to meet the obligations under the regulations.

SECTION IV
GENERAL OBLIGATIONS OF DIGITAL CONNECTIVITY RATING AGENCY

8. **Code of Conduct**.– Every DCRA shall abide by the Code of Conduct contained in Schedule-I to these regulations.

9. **Disclosure of fees and other terms and conditions to the property manager.–** (1) Every DCRA shall disclose the fee to be charged and other terms and conditions, if any, to the property manager and get their acceptance before commencement of any rating activity.

    (2) The fees charged by DCRA shall be based on the category and classification of properties as provided in regulation 3, the responsibility of DCRA under the provisions of these regulations, the complexity involved, the area of the property, etc.

    (3) DCRA shall offer suitable fee terms to the property manager, in a transparent manner, based on its obligations for the rating of the property.

10. **Evaluation and award of ratings.–** (1) Every DCRA shall comply with the rating criteria, process for evaluation and award of ratings as provided in these regulations or the orders, directions or guidelines issued by the Authority from time to time.

    (2) No DCRA shall undertake evaluation and rating of any property which may result in potential conflict of interest with property owners or property manager, infrastructure providers, or service providers, which may directly or indirectly affect the transparency of the rating process.

11. **Monitoring of ratings**.– (1) 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.

    (2) 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.

12. **Retention of records and audit of DCRA.–** (1) Every DCRA shall preserve the records, in digital form, pertaining to the evaluation and assessment of digital connectivity and award of ratings, during the validity period of the ratings and provide the same to the Authority, as and when the Authority may direct.

    (2) The Authority may, if it considers expedient so to do and to ensure compliance of the provisions of these regulations, direct any of its officers or appoint an auditor from the panel of auditors as may be notified by the Authority under sub-regulation (3), to undertake verification or audit, which may include inspection of the records maintained by the DCRA.

    (3) The Authority may, from time to time, notify a panel of auditors to audit the evaluation and assessment of digital connectivity and award of ratings by DCRA to ensure compliance of these regulations.

    (4) DCRA shall cooperate with the auditor and provide all relevant records sought by the auditor.

    (5) The Authority may specify the objective criteria and the frequency for the audit, by an order or direction, from time to time. The results of such audits may be published on the rating platform.

SECTION V
GENERAL OBLIGATIONS OF PROPERTY MANAGER

13. **Registration on rating platform.–** (1) Any property manager, who intends to apply for 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.

    (2) 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.

    (3) The fees for rating of property shall be mutually decided by DCRA and the property manager as provided under regulation 9.

14. **Application for rating of property for digital connectivity. –** (1) Every property manager, who intends to get their property rated for digital connectivity under these regulations, shall apply for such rating on the rating platform, in such manner and format, as may be specified by the Authority from time to time.
    Provided that an application for rating of properties, under construction, shall be accompanied with approved design documents and other relevant details as may be specified by the Authority.
    Provided further that the property manager may also undertake optional digital connectivity audit through the registered DCRAs without applying for rating for digital connectivity.

    (2) 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.

15. **Facilitation and co-operation during rating process and inspection. –** (1) Every property manager shall, during the evaluation and assessment of the property and the validity of the ratings, co-ordinate and co-operate with DCRA, or the auditor or such officers as may be appointed by the Authority, and grant access to the property for smooth conduct of evaluation and assessment as per the provisions of these regulations.

    (2) The Authority may, if it considers expedient so to do, appoint its own officers or direct DCRA to inspect the property which has been rated for digital connectivity under these regulations.

16. **Compliance of terms and conditions of rating certificate. –** (1) Every property manager shall adhere to the terms and conditions associated with the ratings awarded to their property, as provided under these regulations and as may be specified by the Authority, by orders, directions, guidelines or instructions, from time to time.

17. **Compliance to approved DCI design. –** (1) Every property manager shall comply with the approved design for implementation of DCI during the construction stage and shall not make any change without the prior approval of the agency which has granted such approval.

18. **Repair and maintenance of DCI. –** (1) Every property manager shall properly maintain digital connectivity infrastructure and the related documents, including design, approval, etc., during the validity of ratings.

    (2) Every property manager shall, on the feedback of concerned DCRA or complaints received from end users or from the service providers, review and take remedial action in the manner and within such time period, as may be specified by the Authority.

19. **Renewal of ratings.** – (1) A property manager who intends to renew the rating of the property owned, controlled or

managed by him shall apply for renewal of ratings, on the rating platform, at least one hundred and twenty days prior to the expiry of validity of ratings.

20. **No exclusive arrangement with the service providers. –** (1) No property manager shall enter into an exclusive arrangement or tie-up arrangements with any service provider for providing access to its digital connectivity infrastructure in their property.

21. **Fair use of ratings**.– (1) The property manager shall only use the ratings in a fair, legal and transparent manner and comply with the terms and conditions specified in Schedule-II to these regulations.

    (2) The property manager shall display only the latest rating awarded to the property on its website, advertisement, or marketing campaigns, etc.

    (3) The property manager shall disclose, *suo moto* or on demand, the ratings of digital connectivity infrastructure to the concerned stakeholders, including potential tenants, residents, or investors, etc.

22. **Change of property manager or ownership and continuity of DCI.-** (1) The property manager shall inform the Authority, about change of property manager or ownership, within thirty days of such change, on the rating platform, in such manner and format as the Authority may specify.

    (2) In case of change of property manager, the property manager shall ensure smooth transfer of digital connectivity infrastructure to the new property manager for continuity of digital connectivity till the validity of the rating certificate awarded in respect of the property, and may include suitable provisions in the agreement to ensure compliance of the provisions of the regulations and terms and conditions of the rating certificate, post transfer of the property, failing which the ratings awarded to the property may be suspended or withdrawn by the Authority.

    (3) The failure of the property manager to intimate the change under sub-regulation (1) to the Authority shall be considered as contravention of the regulations.

SECTION VI
GENERAL OBLIGATIONS OF SERVICE PROVIDERS

23. **No exclusive arrangement with Property Manager for digital connectivity**.– (1) No service provider shall enter into an exclusive arrangement or tie-up arrangement with any property manager for development or access of digital connectivity or digital connectivity infrastructure in their property.

SECTION VII
RATING CRITERA AND PROCESS FOR EVALUATION OF DIGITAL CONNECTIVITY AND AWARD OF RATINGS

24. **Rating criteria for evaluation of digital connectivity in category 'A' property.-** (1) DCRA shall evaluate category 'A' property as per the following criteria, weightage and sub-criteria:-

Sl. No.	Criteria	Weightage	Sub-Criteria
1	Compliance to applicable Model Building Bye Laws (MBBL) and National Building Code(NBC) for digital connectivity	5	1.1 Approved DCI design 1.2 DCI implementation as per approved DCI design
2	Provision in civil infrastructure, over and above MBBL and NBC requirements, for ensuring robust digital connectivity	5	2.1 Provision for expansion of telecom rooms and cable pathways 2.2 Provision for expansion of mobile and wireline connectivity 2.3 Ease of access of DCI installed for repair or maintenance
3	Provision in power infrastructure, over and above MBBL or NBC requirements, for ensuring reliable digital connectivity	5	3.1 Redundancy of power source 3.2 UPS power backup for DCI 3.3 Power continuity monitoring 3.4 Building Management System
4	Digital Connectivity Infrastructure Resilience	10	4.1 Availability of alternate entry paths for digital connectivity infrastructure 4.2 Non-flooding measures for DCI installation 4.3 Implementation of redundancy in power source and DCI paths
5	Future Readiness of Digital Connectivity Infrastructure	10	5.1 Availability of the latest generation of mobile connectivity 5.2 Support for future bands 5.3 Upgradability of wireline DCI
6	Provision of Wired Connectivity infrastructure	20	6.1 Backhaul fibre connectivity (service provider to property) 6.2 Fibre connectivity till user premises 6.3 Fibre connectivity in each room or office or commercial space
7	Availability of Service Providers	15	7.1 Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure 7.2 Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure
8	Service Performance	25	8.1 Mobile network coverage and performance in public areas of property 8.2 Secure public Wi-Fi network coverage and performance in public areas of property

Sl. No.	Criteria	Weightage	Sub-Criteria
			8.3 Mobile network coverage and performance in non-public areas
			8.4 Secure public Wi-Fi network coverage and performance in non-public areas
			8.5 Average download speed of different wireline network(s) in respective highest speed plan
9	User Experience	5	User feedback on digital connectivity experience

Note: (i) In case of new property, where actual end users are yet to use services, the weightage against 'user experience' shall be merged with 'Service Performance'.

(ii) For the purposes of rating for digital connectivity, MBBL issued by Ministry of Housing and Urban Affairs (MoHUA) shall be referred in cases where Building Byelaws of Cities/State or Union Territory do not have provisions for digital connectivity infrastructure.

(2)   The Authority may, by order, direction or guidelines, specify the weightage against each sub-criteria provided under sub-regulation (1) from time to time.

25.   **Rating criteria for evaluation of digital connectivity in category 'B' property. -** (1) DCRA shall evaluate category 'B' property as per the following criteria, weightage and sub-criteria:-

Sl. No.	Criteria	Weightage	Sub-Criteria
1	Provision in power infrastructure for ensuring reliable digital connectivity	10	1.1 Redundancy of power source 1.2 UPS Power backup for DCI 1.3 Power continuity monitoring 1.4 Building Management System
2	Digital Connectivity Infrastructure Resilience	10	2.1 Availability of alternate entry paths for digital connectivity infrastructure 2.2 non-flooding measures for DCI installation 2.3 Implementation of redundancy in power source and DCI paths
3	Future Readiness of Digital Connectivity Infrastructure	10	3.1 Availability of latest generation of mobile connectivity 3.2 Support for future bands 3.3 Upgradability of wireline DCI
4	Provision of Wired Connectivity infrastructure	20	4.1 Backhaul fibre connectivity (service provider to property) 4.2 Fibre connectivity till user premises 4.3 Fibre connectivity in each room or office or commercial space

5	Availability of Service Providers	15	5.1 Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure 5.2 Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure
6	Service Performance	25	6.1 Mobile network coverage and performance in public areas of property 6.2 Secure public Wi-Fi network coverage and performance in public areas of property 6.3 Mobile network coverage and performance in non-public areas 6.4 Secure public Wi-Fi network coverage and performance in non-public areas 6.5 Average download speed of different wireline network(s) in respective highest speed plan
7	User Experience	10	User feedback on digital connectivity experience

(2)   The Authority may, by order, direction or guidelines, specify the weightage against each sub-criteria provided under sub-regulation (1) from time to time.

26.   **Evaluation, assessment and award of rating.–** (1) The rating process shall be implemented through the rating platform only.

(2)   DCRA shall evaluate the property and assign scores, on the rating platform, against each rating criteria and sub-criteria, as provided under Regulation 24 or Regulation 25, as the case may be, and award rating as under:-

S. No	Score Range	Digital Connectivity Rating to be awarded
1	>=25-32	★
2	>32-40	★½
3	>40-48	★★
4	>48-56	★★½
5	>56-64	★★★
6	>64-72	★★★½
7	>72-80	★★★★
8	>80-88	★★★★½
9	More than 88	★★★★★

(3) DCRA shall update the rating awarded to the property on the rating platform and issue the rating certificate through the rating platform, which shall be digitally signed by the DCRA.

(4) The rating certificates may be downloaded by the property manager through the rating platform.

(5) The ratings awarded for different properties shall also be available on rating platform for viewing by end users and public.

(6) The Authority may specify the manner and process of evaluation and assessment of digital connectivity for award of ratings to the property, including the timelines, from time to time.

27. **Appeal against ratings awarded.–** (1) In case the property manager is not satisfied with the ratings awarded to their property, the property manager may file an appeal on the rating platform, in the manner and format specified by the Authority, within thirty days of issue of the rating certificate.

(2) Upon receipt of appeal, the concerned DCRA shall review and decide the appeal within sixty days, as per the process specified by the Authority.

(3) In case the property manager is still not satisfied with the ratings awarded by DCRA, he may prefer an appeal before the Authority, in the manner and format and upon payment of such fee, as may be specified by the Authority, within thirty days of the decision of DCRA on the appeal under sub-regulation (1).

(4) The Authority may, if it considers expedient so to do, refer such appeals to another DCRA, or a panel of experts for examination of the appeal and recommendation thereon.

(5) No appeal shall be entertained after expiry of the period for filing of the appeal as provided under this regulation.

28. **Review of ratings.–** (1) DCRA may review the ratings awarded, based on the feedback of the consumer or service provider or on complaints, and modify the ratings based on such review, if required:

Provided that DCRA shall not modify the ratings awarded to the property unless the property manager has been given an opportunity to remove such defects or deficiencies and resolve complaints, within ninety days of the date of receipt of communication from DCRA through the rating platform.

29. **Re-rating of property within the validity of the rating certificate.–** (1) The property manager shall be eligible to apply for re-rating of the property during validity period of rating certificate, after paying applicable fees to DCRA, in case:-

a) DCI has been fully upgraded;

b) there has been a change or upgradation in the implemented technology leading to demand for re-rating by their end users;

c) of any change which may affect the rating as per the criteria specified in these regulations.

30. **Validity period of ratings**.– (1) The Authority may, by order, direction or guidelines, specify the validity period of the rating:

Provided that the Authority may specify different validity periods for different categories of properties.

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SECTION VIII

CONSEQUENCES FOR CONTRAVENTION OF THE REGULATIONS

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31. **Consequences for the failure of DCRA to comply with the provisions of the regulations or orders or directions or guidelines**.– (1) If any DCRA fails to comply with the provisions of the regulations, or the orders, directions or guidelines issued thereunder, it shall, without prejudice to the terms and conditions of its registration and listing on rating platform, be liable for suspension or cancellation of registration and shall be barred from undertaking rating of new properties under

these regulations, or de-listed from the rating platform, or blacklisted for a specified period, or any combination thereof, as the Authority may, by order, direct:

Provided that no order for suspension or cancellation of registration or de-listing on rating platform or blacklisting, as the case may be, shall be made by the Authority unless DCRA has been given a reasonable opportunity of representing against the contravention of the regulations, or orders, directions or guidelines issued thereunder.

32. **Consequences for the failure of property manager to comply with the provisions of the regulations or orders or directions or guidelines.–** (1) If any property manager fails to comply with the provisions of the regulations, or orders or directions or guidelines issued thereunder, it shall, without prejudice to the terms and conditions of its registration on rating platform and ratings issued to its properties, be liable for withdrawal of one or more ratings already awarded or in-process, as the Authority may direct:

Provided that no action for withdrawal of ratings shall be made by the Authority unless the property manager has been given a reasonable opportunity of representing against the contravention of the regulations or orders or directions or guidelines, observed by the Authority.

SECTION IX
MISCELLANEOUS

33. **Review.**— The provisions of these regulations may be reviewed by the Authority from time to time.

34. **Interpretation.** — In case of any doubt regarding interpretation of any of the provisions of these regulations, the decision of the Authority shall be final and binding.

Secretary, TRAI

Code of Conduct for DCRAs

DCRA shall follow the code of conduct specified hereunder: -

(i) **Impartiality and independence**: DCRA shall remain impartial and independent during digital connectivity assessment and entire rating process. DCRA should not have any financial interest or ownership or operational interests in the property under evaluation and assessment. To avoid any conflict of interest, any DCRA providing DCI services shall not undertake digital connectivity assessment of properties where another DCRA has provided DCI services. DCRA shall establish policy and procedures for reviewing the work of its agents/employees to ensure independence of evaluation and assessment without external influences.

(ii) **Transparency and disclosure**: DCRAs shall maintain documented process for evaluation and assessment of digital connectivity as specified by the Authority and disclose all relevant information about their evaluation and assessment methodologies. DCRA shall maintain verifiable historical information, in electronic form, about ratings awarded by it during the validity of ratings.

(iii) **Compliance with regulations**: DCRAs shall strictly adhere to the regulations, guidelines, and standards set forth by the Authority for the digital connectivity rating system.

(iv) **Data privacy and security:** DCRAs shall implement robust data privacy and security measures to protect sensitive information collected during digital connectivity assessments and comply with all relevant data privacy regulations.

(v) **Qualified personnel**: DCRAs shall employ qualified and certified professionals with the necessary expertise and experience to conduct digital connectivity assessment as per the provisions of the regulations. DCRA shall ensure regular training and upskilling of its concerned employees to account for technological upgradations.

(vi) **Fair and non-discriminatory practices:** DCRAs shall ensure that the process for evaluation and assessment of the property and award of rating is fair, transparent and non-discriminatory. The DCRAs shall also ensure that the fees charged by them are fair and without discrimination to any property managers regardless of the type of property or ownership.

(vii) **Clear fee structure:** DCRAs shall establish a clear and transparent fee structure for different categories of properties as per regulations. Maximum chargeable fees (MCF) should be commensurate with the scope of work, and not excessive. MCF should be based on the complexity and size of the property. The broad fee structure and criteria shall be displayed on the rating platform to all relevant stakeholders.

(viii) **Conflict resolution mechanism:** DCRAs shall establish a transparent mechanism for addressing conflicts and disputes with property managers. This mechanism should ensure a fair and unbiased resolution of issues.

(ix) **Compliance with building Bye-Laws**: DCRAs shall ensure that their assessments align with the building bye-laws and other relevant regulations.

(x) **Continuous improvement**: DCRAs shall commit to ongoing improvements in their assessment methodologies by staying updated with technological advancements and adapting to industry best practices.

(xi) **Conflict of interest**: DCRA shall not rate a property that has a stake in the DCRA or its associated business. DCRA shall not undertake evaluation, assessment and rating of any property which may result in potential conflict of interest with property owners or property manager, infrastructure providers, or service providers, which may directly or indirectly affect the transparency of the rating process.

(xii) **Review of ratings**: DCRA shall institute a formal system of any review of ratings under provisions of regulations. The review shall not be taken up by the same personnel involved in initial ratings.

(xiii) **Ethical marketing and advertising**: DCRA shall not use any unethical means for marketing and shall not misrepresent its role or capabilities.

Terms and conditions for fair use of rating and rating certificate

(i) **Ratings are non-transferable**: The ratings are awarded to specific property and are non-transferable. Therefore, the ratings shall only be used for the specific property to which it has been awarded.

(ii) **Use in marketing and promotion**: The property managers can use the awarded ratings in their marketing and promotional materials, including brochures, websites, and advertisements. However, the ratings shall be used accurately and in a non-misleading manner.

(iii) **Non-alteration**: The property managers shall not alter or represent the rating certificates in any way that could be misleading in any manner whatsoever.

(iv) **Periodic updates**: The property managers shall always use the valid ratings and update their rating certificates periodically as and when there is any change.

(v) **Disclosure of ratings**: The property managers shall either *suo moto* disclose the ratings to their users/owners/tenants or provide the details as and when demanded.

(vi) **Compliance with regulatory requirements**: The property managers should adhere to any regulatory requirements related to the use of ratings, ensuring that they do not violate any laws or regulations.

(vii) **Usage within validity period**: The property manager is authorized to use the ratings or rating certificates only during the validity period of the certificate. Use of ratings or rating certificates after the validity period shall be considered as misuse of the certificate and be construed as contravention of the regulations.

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Annexure-III Draft Rating Manual with Amendments

Table of Contents

Abbreviations

Acronyms	Description
AI	Artificial Intelligence
AR	Augmented Reality
BIS	Bureau of Indian Standards
BMS	Building Management System
BoM	Bill of Material
BW	Bandwidth
CSSR	Call Setup Success Rate
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
Gbps	Gigabits per Second
HVAC	Heating, Ventilation, and Air Conditioning
ICT	Information and Communications Technology
IoT	Internet of Things
IBS	In-Building Solutions
IP	Infrastructure Provider
IPv6	Internet Protocol version 6
ISP	Internet Service Provider
KPI	Key Performance Indicator
M2M	Machine to Machine Communication
MBBL	Model Building Bye-Laws

Acronyms	Description
Mbps	Megabits per Second
MCF	Maximum Chargeable Fee
Mn	Million
MoHUA	Ministry of Housing and Urban Affairs
MoS	Mean Opinion Score
NBC	National Building Code
NDCP	National Digital Communication Policy
PM	Property Manager
PON	Passive Optical Network
QoE	Quality of Experience
QoS	Quality of Service
RF	Radio Frequency
RRU	Remote Radio Unit
RSRP	Reference Signal Received Power
SON	Self-Optimizing Networks
TEC	Telecom Engineering Center
TRAI	Telecom Regulatory Authority of India
TSP	Telecom Service Provider
UPS	Uninterrupted Power Supply
URIN	Unique Request Identification Number
VoLTE	Voice over Long-Term Evolution
VoNR	Voice over New Radio
VR	Virtual Reality
WFA	Work From Anywhere
WPA	Wi-Fi Protected Access

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 95 percent of the world population covered by a mobile broadband network[1].

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.

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[1] https://www.itu.int/itu-d/reports/statistics/2023/10/10/ff23-mobile-network-coverage/

India's digital transformation holds immense promise, with nearly ~975 Mn internet users as of 31st May 2025[2] and a growing ecosystem of indigenous digital services, platforms, and applications. This digital transformation could unlock 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 properties 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.

The framework also recognizes the importance of enabling visibility of planned digital connectivity at the design and construction stages of properties, while ensuring that final ratings continue to be awarded based on actual on-ground assessment.

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

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[2] https://www.trai.gov.in/sites/default/files/2025-06/PR_No.51of2025_0.pdf

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. The standardized process also provides for assessment of digital connectivity at different stages of property development, as specified in the regulations.

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, Wi-Fi, cellular connectivity, 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 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 remains relevant in addressing technological advancements, changing user expectations, and emerging challenges. The manual also includes a chapter 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.

This rating manual provides processes and methodology for assessment of digital connectivity under the "Rating of Properties for Digital Connectivity Regulations, 2024". In case of any discrepancy or interpretation, the provision of the regulations shall prevail.

2. Role of Stakeholders

The following sections provide an overview of roles of key stakeholders within the ecosystem including the digital connectivity rating agency, property manager, 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.

In addition to the above, a DCRA may, on a voluntary basis and upon request by a Property Manager, undertake an Optional Digital Connectivity Audit for internal review and improvement purposes for a property, outside the formal rating process and without award of any Digital Connectivity Rating.

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 platform 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.
   d. For under-construction properties, the Property Manager shall also submit a declaration and supporting design-stage documents, as prescribed by the Authority.

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 property and promote initiatives aimed at improving network access and reliability.

A Property Manager may, at its discretion, engage a registered Digital Connectivity Rating Agency (DCRA) for an Optional Digital Connectivity Audit of the property for the purpose of identifying gaps and undertaking improvements in Digital Connectivity Infrastructure, without applying for a Digital Connectivity Rating under the Regulations.

2.3. Service Providers

The Regulation "Rating of Properties for Digital Connectivity Regulations, 2024" defines Service Providers as *"Service Providers means any service provider licensed under section 4 of the Indian Telegraph Act, 1885 or granted authorization under the Telecommunications Act, 2023, to provide telecommunication service"*. Service Providers are responsible for delivering a wide range of telecommunications and digital services, including mobile and fixed-line communication, internet access, Wi-Fi, 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 Service Providers 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)/Infrastructure Providers Category 1 (IP-1s)

DCIPs/IP-1s are entities that develop and maintain the digital infrastructure as per their authorization. This includes network equipment, cabling, and other technological frameworks.

DCIPs/IP-1s are key enablers in the telecommunication and digital ecosystem 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.

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 for 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 cover 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 aspects 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.

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.
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, convention centres, Hospitals, Hotels, Educational Institutions, etc.
4.	Other private or public areas	B	Airport, Bus Station, Railway Station, multi-modal logistic parks, 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, Metro corridors etc.

Table 3.1: Classification of Properties for Rating of digital connectivity

3.7. Rating Process for Constructed Properties

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:
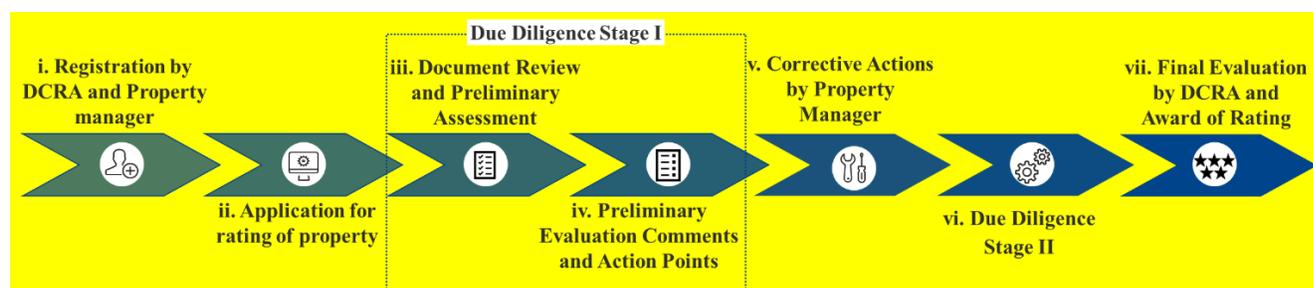

Figure 3.1: High Level Rating Workflow for Constructed Properties

i. **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. **Application for Rating of Properties:**
   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 platform.

   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 rating platform.

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 (Document Review and Preliminary Assessment):**
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. **Due-Diligence Stage I (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 as follows:

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 is provided in Chapter 4 for properties of category 'A' and Chapter 5 for properties of category 'B' 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 and Award of Rating:**
a. **Final Evaluation by DCRA:**
I. 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.

II. 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' and **Chapter 5** for properties of category 'B'.

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

IV. 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.

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

b. **Award of Rating:**
I. After the rating score is updated in the rating platform, the DCRA shall generate a rating certificate and sign it digitally.

II. The Property Manager will be able to download the rating certificate through their registered account on the rating platform 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.

3.8. Rating Process for Properties Under Construction

The rating process for digital connectivity in properties under construction follows a structured, multi-stage evaluation approach to ensure transparency, consistency, and reliability in assessment, while preserving the integrity of final rating outcomes. The

framework enables design-stage assessment of Digital Connectivity Infrastructure (DCI) readiness during the construction phase and provides for final evaluation based on on-ground verification after completion of construction. 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:

Figure 3.2: High Level Rating Workflow for Properties Under Construction

i. **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. **Application for Rating of Properties:**
   a. Property Managers seeking rating for the property under construction shall submit an online application in accordance with regulations, **once all components of Digital Connectivity Infrastructure (DCI) (covering relevant criteria and sub-criteria as per regulations 24 and 25) have been planned and approved as part of the building plan and implementation design is ready**.

   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 platform.

   c. In addition to the standard requirements, the Property Manager shall submit a declaration specific to under-construction properties, in format specified by the Authority. The declaration shall include the following:

I. the **target star rating** that the property intends to achieve.

II. a rating **criterion-wise and sub-criterion-wise plan**, including:

    (a) the proposed measures and design provisions to achieve the declared target rating;

    (b) the target score proposed against each applicable sub-criterion; and

    (c) explanatory remarks mapping the proposed measures to approved design documents.

III. The plan shall be supported by approved design documents and **relevant documentary evidence**, such as approved building plans for DCI, layouts, infrastructure schematics, and other supporting technical documents related to DCI.

IV. The Property Manager shall provide appropriate documentary evidence for each applicable sub-criterion, along with structured responses to specific questions, where prescribed, in order to enable the DCRA to assess the level of digital connectivity provisions at the design stage. Such responses shall clearly explain how the proposed Digital Connectivity Infrastructure complies with the requirements of the relevant criterion and sub-criterion.

d. In addition to the declaration and supporting documents specified above, Property Managers of under-construction properties shall submit all information, particulars, and documents as per regulation and rating manual. This shall include details relating to the Property Manager and the property, such as property name, type, category, status, proof of ownership and ownership details, property address and area particulars, building layout plans including areas proposed for assessment, and any other information or documents required for assessment of digital connectivity under the Regulations and the Rating Manual.

e. 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.

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

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

h. 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 (DCI Design Review, Assessment and Certification by DCRA):**

a. For under-construction properties, the DCRA shall review the submitted declaration and documents to verify completeness, consistency, and alignment with the digital connectivity rating framework.

b. This stage is limited to building plan and DCI design verification and preliminary evaluation, including site visits, where appropriate, to assess alignment with approved designs.

c. During the review of the declaration, design documents, and supporting information submitted by the Property Manager:

I. The concerned Digital Connectivity Rating Agency (DCRA) shall assess the extent to which the proposed design-stage provisions in the property align with the applicable rating criteria and sub-criteria;

II. In respect of those criteria and sub-criteria which involve parameters (such as network speed, coverage, no. of service providers etc.) that cannot be physically verified during the under-construction stage, the assessment shall be based on the structured responses provided in this declaration and the supporting documentary evidence submitted by the Property Manager. Such assessment shall be indicative in nature and subject to verification during Due Diligence Stage–II upon completion of construction and commissioning of Digital Connectivity Infrastructure.

III. Based on such assessment, the DCRA shall determine the appropriate design-stage star level corresponding to the planned Digital Connectivity Infrastructure; and

IV. The property shall be listed on the rating platform with the design-stage star level as assessed by the DCRA, along with an indication that the rating is based on design-stage evaluation.

V. Accordingly, a certificate indicating **"Designed for XX Stars",** as assessed by the DCRA, shall be issued to property manager

VI. The **"Designed for XX Stars"** certificate will be indicative in nature, reflecting design-stage preparedness only, and shall not be treated as a final or provisional Digital Connectivity Rating.

VII. This step must be completed by DCRA within a reasonable period

iv. **Construction Phase Monitoring by DCRA:**
   a. As the deployment of Digital Connectivity Infrastructure progresses during construction, the concerned DCRA, at appropriate stages of construction, will monitor the development of DCI as per submitted design for obtaining rating for design stage and may also suggest corrective and improvement action points, if required, to Property Manager.

v. **Intimation of completion of DCI by Property Manager and Confirmation by DCRA:**
   a. Upon completion of construction and implementation as per DCI design, testing, and integration of Digital Connectivity Infrastructure, the Property Manager shall intimate the concerned DCRA through the rating platform.
   b. Based on such intimation, the DCRA shall verify whether the DCI has been implemented in accordance with the approved design-stage submissions and shall record its confirmation on the rating platform, clearly indicating any deviations, if observed, from the approved design.

vi. **Due-Diligence Stage II:**
   a. Upon completion of construction, testing, and integration of Digital Connectivity Infrastructure, and after confirmation by the concerned DCRA as recorded on the rating platform, the Property Manager may submit a request for initiation of Due Diligence Stage II through the rating platform. Due Diligence Stage II shall be initiated only upon such request by the Property Manager.

   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 is provided in Chapter 4 for properties of category 'A' and Chapter 5 for properties of category 'B' 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.

vii. **Final Evaluation by DCRA and Award of Rating:**
a. **Final Evaluation by DCRA:**
   I. 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.

   II. 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' and **Chapter 5** for properties of category 'B'.

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

   IV. 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.

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

b. **Award of Rating:**
   I. After the rating score is updated in the rating platform, the DCRA shall generate a rating certificate and sign it digitally.

   II. The Property Manager will be able to download the rating certificate through their registered account on the rating platform 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.

3.9. Optional Digital Connectivity Audit

There may be scenarios where a Property Manager may wish to review the level of Digital Connectivity Infrastructure (DCI) in a property for purpose of identifying gaps and undertaking improvements, without applying for a Digital Connectivity Rating. Additionally, once a rating is awarded, it becomes publicly visible, and therefore some Property Managers prefer to first identify gaps and undertake improvements before opting for a formal rating assessment.

In such situations, Property Managers may find value in obtaining an audit of the existing digital connectivity infrastructure against the criteria and sub-criteria prescribed in the Rating Manual, primarily for understanding the present status and areas requiring improvement.

In such cases, Property Manager may, on a voluntary basis, engage a registered Digital Connectivity Rating Agency (DCRA) to undertake an audit of the property's digital connectivity based on the criteria and sub-criteria specified in the Regulation and this Rating Manual.

For the limited purpose of facilitating initiation of such audit and enabling transparency in timelines, a simple electronic form may be made available on the Rating Platform. The form shall capture basic details of the Property Manager and the property, along with selection of a registered DCRA.

Upon submission of such request by the Property Manager, one or more DCRA(s), as selected by Property Manager, shall be notified through the platform. Thereafter, the Property Manager and the selected DCRA may mutually agree on the scope of audit, timelines for completion, and fee structure.

Once mutual agreement is reached, the DCRA shall update its acceptance of the audit request on the platform along with the agreed date of completion of the audit.

The DCRA shall update the status of such audit on the platform upon completion. The role of the platform shall be limited to facilitation of initiation and status tracking only.

The outcome of an Optional Digital Connectivity Audit may include a report indicating the present status of Digital Connectivity, identification of gaps against the applicable criteria and sub-criteria as per Rating Manual, and actionable recommendations for improvement.

Any indicative score or indicative star rating level, if provided, shall be non-binding and for internal reference only.

The digital connectivity audit report prepared by the DCRA shall be shared directly with the Property Manager.

Such optional audit shall not create any right, expectation, or entitlement with respect to award of a Digital Connectivity Rating.

Participation in an Optional Digital Connectivity Audit shall not be a prerequisite for applying for a Digital Connectivity Rating, nor shall it have any bearing on the outcome of a rating assessment undertaken under the Regulation.

High-level workflow for Optional Digital Connectivity Audit is as:

Figure 3.3: High Level Workflow for Optional Digital Connectivity Audit

i.   **Submission of Audit Request:** The Property Manager submits a Optional Digital Connectivity Audit request through a simple electronic form on the rating platform capturing basic property manager and property details along with selection of DCRA.

ii.   **Notification to DCRA(s) and submission of proposals to Property Manager:** The shortlisted DCRA(s) receives intimation of the audit request through the platform. The concerned DCRA(s) will do the due diligence and submit their proposals directly to Property Manager. DCRA may also request for on-site visit if required.

iii. **Mutual Agreement:** The Property Manager and the selected DCRA mutually agree on scope of audit, timelines, and fee. Property Manager shall update the selected DCRA on the platform.

iv.   **Acceptance Update:** The DCRA updates acceptance of the audit request along with agreed date of completion.

v.   **Conduct of Audit:** The DCRA undertakes assessment of Digital Connectivity against applicable criteria and sub-criteria, including on-site assessment, as per this rating manual and prepare audit report.

vi.   **Report Sharing:** The report is shared directly between the DCRA and the Property Manager.

vii.   **Status Update:** The DCRA updates the status of audit as 'completed' on the platform for monitoring purposes.

***

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 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

Criteria No.	S. No. (as per regulation)	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
4.3	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	2
				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

Criteria No.	S. No. (as per regulation)	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
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
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

Criteria No.	S. No. (as per regulation)	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
4.8	8	Service Performance	25	4.8.1 Mobile network coverage and performance in public areas of property	6
				4.8.2 Secure public Wi-Fi network coverage and performance in public areas of property	4
				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*
* In case of new property, where actual end users are yet to use services, the weightage against 'User Experience' shall be merged with 'Service Performance' and will be distributed equally among each sub-criterion. (Refer Table 4.54)					

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. The required supporting documents shall be preserved by the DCRA or uploaded to the rating platform as per the requirement of the regulations, guidelines or rating manual issued or amended from time to time. For awarding the score against each sub-criteria, 'scoring criteria' tables have been provided in the following sections. A property can be awarded only one out of the given scores in 'scoring criteria' table meeting the relevant compliance requirement as prescribed.

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 Model Building Bye-laws (MBBL) 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/telecom areas, HVAC (Heat ventilation air conditioning) in telecom room/telecom area 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 drawings certified by competent authority			Record
3.	Design compliance with MBBL and NBC standards			Record and Upload

Table 4.2: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	2.5	On compliance to MBBL and NBC.
2.	1.5	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 i.e. the requirements under any criteria/sub-criteria listed in section 4.4 & 4.6 of this manual.
Note: Refer 11.1 FAQ xiv. for further details		

Table 4.3: Scoring criteria

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 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.	As-build DCI is as per approved design			Record and Upload
2.	Photographs of DCI			Record and Upload
3.	Site inspection reports for DCI with design comparisons			Record and Upload
4.	Testing and Commissioning certificates for DCI as applicable			Record

Table 4.4: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	2.5	On compliance with the approved design in the implementation of DCI or ICT infrastructure
2.	1.5	If there is minor deviation from approved design in implementation of DCI or ICT infrastructure. Minor deviations shall be those deviations which do not impact future readiness and provision of digital connectivity i.e. the requirements under any criteria/sub-criteria listed in section 4.4 & 4.6 of this manual.

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 assess 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/telecom areas, cable pathways 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 or 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/telecom areas, 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 checklist:** 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/telecom areas		Record and Upload

Table 4.6: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	2	If telecom rooms/telecom areas, horizontal and vertical pathways are expandable to accommodate ≥ 50% expansion with respect to existing capacity.
2.	1.5	If telecom rooms/telecom areas, horizontal and vertical pathways are expandable to accommodate ≥ 30% and < 50% expansion with respect to existing capacity.
3.	0.5	If telecom rooms/telecom areas, horizontal and vertical pathways are expandable to accommodate up to 30% expansion with respect to existing capacity.

Table 4.7: Scoring criteria

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

i. **Objective:** To assess the availability of civil infrastructure like DCI space, pathways, and provisions to allow for the expansion of both mobile (e.g., 4G/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/telecom area, 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 checklist:** 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 and Upload
2.	Future expansion plans		Record and Upload

Table 4.8: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	2	If civil infrastructure or space provision and pathways are available and space is earmarked, in the approved layout, to support installation of Mobile base station(s), Distributed Antenna System (DAS), Wi-Fi, Wireline infrastructure and Direct to Home (DTH) system etc.
2.	1.5	If space provision and pathways exist for at least Mobile base station, DAS, and Wireline infrastructure
3.	1	If space provision and pathways exist for at least Wi-Fi or Wireline infrastructure

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/telecom areas, 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 checklist:** 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 and Upload
2.	Maintenance checklists		Record

Table 4.10: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	1	If physical accessibility of pathways, telecom rooms/telecom areas, cable ducts and equipment is provided **and** labelling of pathways, telecom rooms/telecom areas, cable ducts and equipment is available for DCI.
2.	0.5	If physical accessibility of pathways, telecom rooms/telecom areas, cable ducts and equipment is provided **or** labelling of pathways, telecom rooms/telecom areas, 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 checklist:** 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 and Upload
2.	Load switchover testing reports		Record and Upload

Table 4.12: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	1	If all digital connectivity services affecting load is supported/ fed by redundant power source

Table 4.13: Scoring criteria

4.3.2. Sub-Criteria: UPS power backup for DCI (Weightage – 2)

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 checklist:** 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 and Upload
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 and Upload

Table 4.14: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	2	UPS power backup for important DCI components > 3 Hrs.
2.	1	UPS power backup for important DCI components is ≥ 1 and ≤ 3 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 checklist:** 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

Table 4.16: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	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 important 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 checklist:** 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 and Upload
2.	Test report on DCI power systems, fire alarms and HVAC integration with BMS		Record and Upload
3.	Sample test report on detection and notification of main power supply failure and takeover by generator/UPS for DCI		Record and Upload

Table 4.18: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	1	On availability of BMS integration covering power, fire alarm and HVAC for telecom room(s)/telecom area(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)/telecom area(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 assess 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/telecom areas 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 checklist:** 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 and Upload
2.	Pathway layout diagrams from ducts to telecom room(s)/telecom areas(s) for fiber/ DCI		Record and Upload

Table 4.20: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	3	Availability of alternate duct from property entry point and cable pathway routes till telecom room(s)/telecom areas(s)
2.	2	Availability of alternate duct from property entry point till telecom room(s)/telecom area(s)
3.	1	Availability of alternate cable pathway routes from common location in property till telecom room(s)/telecom area(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 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/telecom areas 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 telecom/DCI rooms/telecom areas 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 checklist:** The DCRAs shall prepare and maintain the compliance summary in the following format:

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

Table 4.22: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	3	Telecom/DCI room(s)/Telecom area(s) and UPS are above ground floor and generators/ switching panels are installed with non-flooding considerations
2.	2	Only Telecom/DCI room(s)/Telecom area(s) is implemented above ground floor and backup power system (UPS) is implemented with non-flooding measure
3.	1	If Telecom/DCI room(s)/Telecom areas(s) 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 Telecom/digital connectivity infrastructure room(s)/ Telecom area(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 checklist:** 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 and Upload
3.	Whether sample test reports demonstrate testing of redundancy?		Record and Upload
4.	Whether path diversity for fiber and other cables (DTH/ ethernet as applicable) across the building blocks, basements and towers from telecom/digital connectivity infrastructure room(s)/ telecom area(s) is implemented?		Record and Upload

Table 4.24: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

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

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 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 checklist:** 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 and Upload

Table 4.26: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	4	If equipment like DAS, RRU, Base Station, etc. supporting 5G **and** 4G technology are installed in the property for mobile connectivity
2.	2	If equipment like DAS, RRU, Base Station, etc. supporting 4G **or** 5G 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 checklist:** 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 and Upload

Table 4.28: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	3	If installed infrastructure supports future bands for 4G and 5G technology and/or Wi-Fi network as per the extant National Frequency Allocation Plan issued by DoT.
2.	2	If installed infrastructure supports future bands for 4G technology and/or Wi-Fi network as per the extant National Frequency Allocation Plan issued by DoT.
3.	1	If installed infrastructure supports future bands for 4G technology or Wi-Fi network as per the extant National Frequency Allocation Plan issued by 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 checklist:** 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 and Upload

Table 4.30: Compliance checklist

iv. **Scoring criteria**: The DCRA shall award score against this sub-criterion as follows:

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

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 capacity check:**

1. Record the provisioned Bandwidth capacity in the property for each service provider.
    i. BW capacity on fiber
    ii. BW capacity on wireless
    iii. BW on any other media (please specify)

c. **Supporting documents:**

1. Fiber cable details from 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 checklist:** 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/telecom area		Record and Upload

Table 4.32: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Criteria
1.	10	Score Awarded = $\dfrac{(5) *(\text{No. of wireline service providers having fiber backhaul})}{(\text{No. of wireline service providers present in the property})}$ $+$ $\dfrac{(5) *(\text{No. of wireless service providers having fiber backhaul})}{(\text{No. of wireless service providers present in the property})}$

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 extends from the telecommunication room/transmission room/telecommunication area up to the end-users within a property. The aim is to facilitate the extension of digital connectivity to the residents, businesses, and offices. 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)/telecom area(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/telecom area or meeting point to each unit.

   2. Fiber test reports confirming connectivity to each unit

iii. **Compliance checklist:** 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 sand Upload

Table 4.34: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If fiber connectivity is extended from telecommunication room/ transmission room/ telecommunication area to all user units within the property
2.	4	If fiber connectivity is extended from telecommunication room/ transmission room/ telecommunication area to a minimum of 75% of user units within the property
3.	3	If fiber connectivity is extended from telecommunication room/ transmission room/ telecommunication area to a minimum of 50% of user units within the property
4.	2	If fiber connectivity is extended from telecommunication room/ transmission room/ telecommunication area 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 checklist:** 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 score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If fiber connectivity is extended in each room/ office/ commercial space of all user units within the property
2.	4	If fiber connectivity is extended in each room/ office/ commercial space of minimum 75% of user units within the property
3.	3	If fiber connectivity is extended in each room/ office/ commercial space of minimum 50% of user units within the property
4.	2	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.

ii. **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.

iii. **Compliance checklist:** 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

S. No.	Item description	Compliance (Yes/ No)	Record maintenance requirement (Upload/ DCRA level)
2.	Network integration certificates/ test reports		Record
3.	Service subscription status		Record and Upload

Table 4.38: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	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 measured as per methodology in section 4.8. Having multiple mobile service providers ensures users have reliable network coverage, high-quality service, and reduced congestion, particularly in high-density areas like commercial properties, 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 property.

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. Walk/drive test results and/or RF coverage map in the property

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

iii. **Compliance checklist:** 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.	Walk/drive test results and/or RF coverage map in the property		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 score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	7.5	If 3 or more mobile service providers individually have overall more than 75% coverage (RSRP ≥ -110 dBm) for 4G/5G services in the property either through integration with DCI or otherwise.
2.	5	If at least two mobile service providers individually have overall more than 75% coverage (RSRP ≥ -110 dBm) for 4G/5G services in the property either through integration with DCI or otherwise.
3.	2	If at least one mobile service providers have overall more than 75% coverage (RSRP ≥ -110 dBm) for 4G/5G services in the property either through integration with DCI or otherwise.

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 including lifts and basements. 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)'.*

To assess service performance for mobile (data and voice services) and Wi-Fi services (data services), at least one sample for each of 5x5 meter or less size of tile size will be collected as far as feasible for respective service provider. For example, if the total public area of the property is 10000 square meters, then a minimum of 400 samples in each day are to be collected for relevant parameter. TRAI App shall be used for the testing of coverage and download speeds. To calculate the download speeds for mobile and Wi-Fi services, all the download speed samples shall be arranged in descending order (starting highest download speed recorded during entire assessment period) and the 80th percentile value, arrived after such arrangement, shall be considered the minimum download speed. For illustration, if a total of 1200 samples have been collected during the assessment period, then these values shall be arranged in descending order and 1200*0.8=960th value of download speed shall be taken as minimum download speed for the mobile or Wi-Fi service.

For assessment of voice service performance, a structured and repeatable methodology shall be followed to measure key parameters. During the assessment, one test device (call terminating) will be placed at a fixed location in the property and other device (call originating) shall be used for sample collection around different areas of the property as per sampling methodology. Each test call shall begin with dial initiation, and a maximum of 15 seconds shall be allowed for the call to be successfully established. Calls not connected within this duration shall be recorded as failed attempts. For calls that are successfully established, the call shall be maintained for a duration of 90 to 120 seconds to observe call stability and identify any premature disconnections. After completion of the call duration, the call shall be normally terminated. A wait time of 15 seconds shall be observed before initiating the next call. This process shall be repeated in accordance with the sampling plan. The same methodology shall be referred to in the subsequent sections where Call Setup Time, Call Setup Success Rate, and Call Drop Rate are defined and calculated. The DCRA shall use industry-standard tools for assessment of voice service performance. Further, DCRA must ensure using the same tool for evaluating all service providers within a property to assess voice service performance.
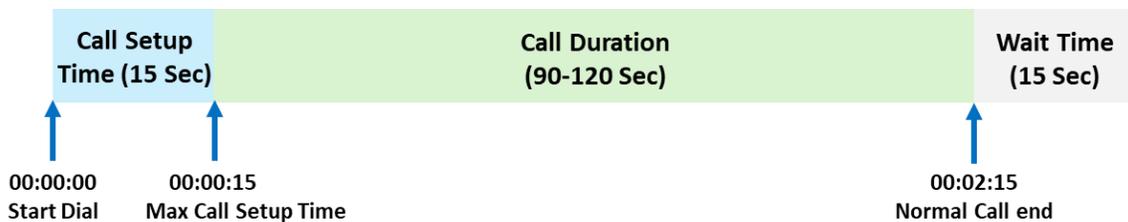

Figure 4.1: Call Flow for measuring Voice services performance

4.8.1. Sub-Criteria: Mobile network coverage and performance in public areas of property
(Weightage – 6)

i. **Objective:** The mobile network performance in public areas (e.g., common area, lobbies, corridors, lifts, basements) 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, lifts, basements, and entrances using industry standard tools.

   b. Assess data speed and voice call quality over minimum three days (preferably 10 am to 8 pm with samples uniformly distributed covering peak hours [10 am to 12 noon and 6 pm to 8 pm] in property) using prescribed methodology for each

service provider whose coverage is available on the property and accounted under criteria '*4.7- Availability of Service Providers*'. Measurements to be carried out shall include peak as well as off-peak hours.

c. The call setup time, call setup success rate and call drop rate, for voice services, will be measured as per the measurement methodology prescribed in section 4.8.1. ii. d. Number of test samples and methodology shall be as prescribed in section 4.8 above.

d. The following methodology shall be used for calculating call setup success rate, call drop rate and call setup time:

1. **Call setup success rate:** Call Setup Success Rate is defined as the ratio of Established Calls to Call Attempts. 'Established Calls' mean the following events have happened in call setup:

    (a) Call attempt is made

    (b) The signaling channel is allocated

    (c) The call is routed to the outwards path of the terminating network

    (d) An alert signal is received by caller in the form of ring back tone, busy tone, or an announcement.

    CSSR = (Total Call Established/ Total Call Attempt) *100

2. **Call Drop rate:** Call drop represents the service provider network's ability to maintain a call once it has been successfully established. This parameter shall include both incoming calls and outgoing calls which, once they have been established and have an assigned traffic channel/ bearer, are dropped, or interrupted before their normal completion by the user, the cause of the early termination being within the service provider's network

    Call Drop Rate = (Total Call Drop/Total Call Established) *100

3. **Call setup time:** Time taken from call initiate to call alerting/ringing.

    Call Setup Time = T2- T1

    T2- Ringing (VoLTE/VoNR),
    T1- Invite (VoLTE/VoNR)

iii.   Supporting documents

1. Walk/drive test results and/or RF coverage map of public areas

2. Speed test logs and call setup time, call setup success rate and call drop rate reports.

iv. **Compliance checklist:** 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.	Walk/drive test results and/or RF coverage map of public areas		Record and Upload
2.	Speed test logs, call setup time, call setup success rate and call drop rate		Record and Upload
3.	Speed and coverage samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 4.42: Compliance checklist

v. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
Part A		
1.	4	If at least 3 service providers individually have overall more than 85% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in public areas (including common area, lifts, and basements), with minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
2.	3	If at least two service providers individually have overall more than 85% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in public areas (including common area, lifts, and basements), with minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.

S. No.	Score	Compliance Requirement
3.	2	If at least one service provider has more than 85% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in public areas (including common areas, lifts, and basements), with minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
Part B		
1.	2	If call drop rate ≤ 2% **and** call setup success rate ≥ 98% for each service provider
2.	1	If call drop rate ≤ 2% **or** call setup success rate ≥ 98% for each service provider
Note 1: Refer methodology in Section 4.8 for calculation of minimum download speed. **Note 2:** This sub-criterion is evaluated in two parts — Part A and Part B. The property shall be assessed separately under each part. The overall score for this sub-criterion shall be the sum of the scores awarded in Part A and Part B.		

Table 4.43: Scoring criteria

4.8.2. Sub-Criteria: Secure public Wi-Fi network coverage and performance in public areas of property
(Weightage – 4)

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, lifts, basements, and open seating spaces.

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

c. Conduct speed and latency tests covering peak hours (10 am to 12 noon and 6 pm to 8 pm) over minimum three days (preferably 10 am to 8 pm) using industry standard tools using prescribed methodology.

iii. **Supporting documents**

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

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

iv. **Compliance checklist:** 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 speed test results		Record and Upload
2.	Wi-Fi security audit reports		Record
3.	Speed samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 4.44: Compliance checklist

v. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	4	If minimum download speed of 20 Mbps is available from Wi-Fi in public or common area of the property (including lifts and basements).
2.	2	If minimum download speed of 10 Mbps is available from Wi-Fi in public or common area of the property (including lifts and basements).
Note: Refer methodology in Section 4.8 for calculation of minimum download speed.		

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. Assess data speed and voice call quality over minimum three days (preferably 10 am to 8 pm with samples uniformly distributed covering peak hours [10 am to 12 noon and 6 pm to 8 pm] in property) using prescribed methodology for each service provider whose coverage is available on the property and accounted under criteria '4.7- Availability of Service Providers'. Measurements to be carried out shall include peak as well as off-peak hours.

c. The call setup time, call setup success rate and call drop rate, for voice services, will be measured as per the measurement methodology prescribed in section 4.8.3. ii. d. Number of test samples and methodology shall be as prescribed in section 4.8 above.

d. The following methodology shall be used for calculating call setup success rate, call drop rate and call setup time:

1. **Call setup success rate:** Call Setup Success Rate is defined as the ratio of Established Calls to Call Attempts. 'Established Calls' mean the following events have happened in call setup:

    (a) Call attempt is made

    (b) The signaling channel is allocated

    (c) The call is routed to the outwards path of the terminating network

    (d) An alert signal is received by caller in the form of ring back tone, busy tone, or an announcement.

    CSSR = (Total Call Established/ Total Call Attempt) *100

2. **Call Drop rate:** Call drop represents the service provider network's ability to maintain a call once it has been successfully established. This parameter shall include both incoming calls and outgoing calls which, once they have been established and have an assigned traffic channel/ bearer, are dropped, or interrupted before their normal completion by the user, the cause of the early termination being within the service provider's network

   Call Drop Rate = (Total Call Drop/Total Call Established) *100

3. **Call setup time:** Time taken from call initiate to call alerting/ringing.

   Call Setup Time = T2- T1

   T2- Ringing (VoLTE/VoNR),
   T1- Invite (VoLTE/VoNR)

iii. **Supporting documents**

1. Walk/drive test results and/or RF coverage map of the area under test

2. Speed test logs and call setup time, call setup success rate and call drop rate reports.

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.	Walk/drive test results and/or RF coverage map of the area under test		Record and Upload
2.	Speed test logs, call setup time, call setup success rate and call drop rate		Record and Upload
3.	Speed and coverage samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 4.46: Compliance checklist

v. Scoring criteria: The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
Part A		
1.	4	If at least 3 service providers individually have overall more than 80% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services 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 individually have overall more than 70% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services 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 individually have overall more than 50% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in non-public areas, with average minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
Part B		
1.	1	If call drop rate ≤ 2% **and** call setup success rate ≥ 98% for each service provider
2.	0.5	If call drop rate ≤ 2% **or** call setup success rate ≥ 98% for each service provider
Note 1: Refer methodology in Section 4.8 for calculation of minimum download speed. **Note 2:** This sub-criterion is evaluated in two parts — Part A and Part B. The property shall be assessed separately under each part. The overall score for this sub-criterion shall be the sum of the scores awarded in Part A and Part B.		

Table 4.47: Scoring criteria

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 speed and latency tests covering peak hours (10 am to 12 noon and 6 pm to 8 pm) over minimum three days (preferably 10 am to 8 pm) using industry standard tools using prescribed methodology.

iii. **Supporting documents:**

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

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

iv. **Compliance checklist:** 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

S. No.	Item description	Compliance (Yes/ No)	Record maintenance requirement (Upload/ DCRA level)
2.	Wi-Fi speed test results		Record and Upload
3.	Speed samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 4.48: Compliance checklist

v. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If minimum download speed of 20 Mbps is available from Wi-Fi in non-public area of the property
2.	3	If minimum download speed of 10 Mbps is available from Wi-Fi in non-public area of the property
3.	2	If minimum download speed of < 10 Mbps and > 2 Mbps is available from Wi-Fi in non-public area of the property
Note: Refer methodology in Section 4.8 for calculation of minimum download speed.		

Table 4.49: Scoring criteria

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 App). Conduct tests during the prescribed time window (preferably 10 am to 8 pm) including peak traffic hour(s) (10 am to 12 noon and 6 pm to 8 pm) at least at five different user locations distributed across the property as far as possible. Minimum five test sample per location shall be collected.

b. To calculate the average download speeds, all the download speed samples shall be arranged in descending order (starting highest download speed recorded during entire assessment period) and the 90th percentile value, arrived after such arrangement, shall be considered the average download speed. For illustration, if a total of 120 samples have been collected during the assessment period, then these values shall be arranged in descending order and 120*0.9=108th value of download speed shall be taken as average download speed.

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

iii. **Compliance checklist:** 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
2.	Speed samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 4.50: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If download speed of any two wireline network is more than 500 Mbps as calculated above [section 4.8.5 ii. b.]
2.	4	If the download speed of any two wireline network is more than 250 Mbps as calculated above [section 4.8.5 ii. b.]
3.	3	If the download speed of any two wireline network is more than 100 Mbps as calculated above [section 4.8.5 ii. b.]
4.	2	If the download speed of any two wireline network is more than 50 Mbps as calculated above [section 4.8.5 ii. b.]

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:**

    a. 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 score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If 80% of users provide overall positive experience for digital connectivity in the property
2.	4	If 70% of users provide overall positive experience for digital connectivity in the property
3.	3	If 60% of users provide overall positive experience for digital connectivity in the property
4.	2	If 50% of users provide overall positive experience for digital connectivity in the property
5.	1	If 40% of users provide overall positive experience for digital connectivity in the property

Table 4.53: Scoring criteria

Note: Overall positive experience refers to the user feedback provided in the form prescribed under Appendix 11.4 of this Manual. In this context, if a user has rated the Overall Experience as 4 or higher, the experience shall be considered as positive.

Note: In case of new property, where actual end users are yet to use services, the weightage against 'User Experience' shall be merged with 'Service Performance' and will be distributed equally among each sub-criterion. For instance, the complete weightage of 'User Experience' i.e. 5 will be distributed equally (1 each) among 5 sub-criteria of 'Service Performance'. Considering an example of 4.8.5 (Average download speed of different wireline network(s) in respective highest speed plan), the maximum scoring in such scenario would change to 6. Accordingly, the scores of scoring criteria (Table 4.51) will be updated to 6,5,4,3 for S. No. 1,2,3,4 respectively. Similar change will be incorporated for sub-criteria 4.8.2,4.8.4 and 4.8.5 of Section 4.8 (Service Performance) where score of each scoring criteria will be incremented by 1. For sub-criteria 4.8.1 and 4.8.3, similar change will be incorporated for scoring in Part A only i.e. scoring of Part B will remain the same.

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. It is to be noted that the scores against each sub-criteria will be awarded strictly as per the scoring criteria given above.

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Score awarded by DCRA [e]
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 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 above MBBL or NBC requirements, for ensuring	5	4.3.1 Redundancy of power source	1	
			4.3.2 UPS power backup for DCI	2	
			4.3.3 Power continuity monitoring	1	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Score awarded by DCRA [e]
	reliable digital connectivity		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	
			4.6.3 Fiber connectivity in each room or office or commercial space	5	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Score awarded by DCRA [e]
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	6*	
			4.8.2 Secure public Wi-Fi network coverage and performance in public areas of property	4*	
			4.8.3 Mobile network coverage and performance in non-public areas	5*	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Score awarded by DCRA [e]
			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	User Experience	5	4.9.1 User feedback on digital connectivity experience	5#	
* In case of new property, where actual end users are yet to use services, these weightages will be incremented by 1. # In case of new property, where actual end users are yet to use services, this weightage will be considered as 0.					

Table 4.54: Summary of Rating Score

5. Assessment Methodology for Category 'B' Properties

The regulation 25 under Section – VII "Rating criteria and process for evaluation of digital connectivity and award of ratings" of the Regulation provides criteria, weightage and high-level sub-criteria against each main criterion as indicated in column [a], [b], and [c] respectively in Table 5.1. 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 for properties under Category 'B'.

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
5.1	Provision in power infrastructure for ensuring reliable digital connectivity	10	5.1.1 Redundancy of power source	2
			5.1.2 UPS power backup for DCI	4
			5.1.3 Power continuity monitoring	2
			5.1.4 Building Management System	2
5.2	Digital Connectivity Infrastructure Resilience	10	5.2.1 Availability of alternate entry paths for digital connectivity infrastructure	3
			5.2.2 Non-flooding measures for DCI installation	3
			5.2.3 Implementation of redundancy in power source and DCI paths	4
5.3	Future Readiness of Digital Connectivity Infrastructure	10	5.3.1 Availability of the latest generation of mobile connectivity	4
			5.3.2 Support for future bands	3
			5.3.3 Upgradability of wireline DCI	3

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]
5.4	Provision of Wired Connectivity infrastructure	20	5.4.1 Backhaul fibre connectivity (service provider to property)	10
			5.4.2 Fibre connectivity till user premises	5
			5.4.3 Fibre connectivity in each room or office or commercial space	5
5.5	Availability of Service Providers	15	5.5.1 Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure	7.5
			5.5.2 Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure	7.5
5.6	Service Performance	25	5.6.1 Mobile network coverage and performance in public areas of property	6
			5.6.2 Secure public Wi-Fi network coverage and performance in public areas of property	4
			5.6.3 Mobile network coverage and performance in non-public areas	5
			5.6.4 Secure public Wi-Fi network coverage and performance in non-public areas	5
			5.6.5 Average download speed of different wireline network(s) in respective highest speed plan	5
5.7	User Experience	10	5.7.1 User feedback on digital connectivity experience	10

Table 5.1: Weightage for different sub-criteria for category 'B' properties

The Digital Connectivity Rating Agency (DCRA) shall assess the digital connectivity and associated infrastructure as per provisions of the Regulations. The 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. The required supporting documents shall be preserved by the DCRA or uploaded to the rating platform as per the requirement of the regulations, guidelines or rating manual issued or amended from time to time. For awarding the score against each sub-criteria, 'scoring criteria' tables have been provided in the following sections. A property can be awarded only one out of the given scores in 'scoring criteria' table meeting the relevant compliance requirement as prescribed.

5.1. Provision in Power Infrastructure for Ensuring Reliable Digital Connectivity
(Weightage – 10)

This criterion evaluates provisions in power infrastructure to ensure uninterrupted and reliable power supply for digital connectivity.

5.1.1. Sub-Criteria: Redundancy of power source
(Weightage – 2)

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 checklist:** 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 and Upload
2.	Load switchover testing reports		Record and Upload

Table 5.2: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	2	If all digital connectivity services affecting load is supported/ fed by redundant power source

Table 5.3: Scoring criteria

5.1.2. Sub-Criteria: UPS power backup for DCI (Weightage – 4)

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 and Upload
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 and Upload

Table 5.4: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	4	UPS power backup for important DCI components > 3 Hrs.
2.	2	UPS power backup for important DCI components is ≥1 and ≤3 Hrs.

Table 5.5: Scoring criteria

5.1.3. Sub-Criteria: Power continuity monitoring (Weightage – 2)

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 checklist:** 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

Table 5.6: Compliance checklist

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

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

Table 5.7: Scoring criteria

5.1.4. Sub-Criteria: Building Management System (Weightage – 2)

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 checklist:** 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 and Upload
2.	Test report on DCI power systems, fire alarms and HVAC integration with BMS		Record and Upload

S. No.	Item description	Compliance (Yes/ No)	Record maintenance requirement (Upload/ DCRA level)
3.	Sample test report on detection and notification of main power supply failure and takeover by generator/ UPS for DCI		Record and Upload

Table 5.8: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

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

Table 5.9: Scoring criteria

5.2. 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.

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

i. **Objective:** To assess 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/telecom areas 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 checklist:** 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 and Upload
2.	Pathway layout diagrams from ducts to telecom room(s)/telecom area(s) for fiber/ DCI		Record and Upload

Table 5.10: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

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

Table 5.11: Scoring criteria

5.2.2. 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 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/telecom area 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/telecom rooms/telecom areas 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 checklist:** 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 of whether DCI/ telecom room(s)/telecom area(s) are above ground floor as per design and implementation?		Record and Upload

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

Table 5.12: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

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

Table 5.13: Scoring criteria

5.2.3. **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 telecom/digital connectivity infrastructure room(s)/telecom area(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 checklist:** 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 and Upload
3.	Whether sample test reports demonstrate testing of redundancy?		Record and Upload

S. No.	Item description	Compliance (Yes/ No)	Record maintenance requirement (Upload/ DCRA level)
4.	Whether path diversity for fiber and other cables (DTH/ ethernet as applicable) across the building blocks, basements and towers from telecom/digital connectivity infrastructure room(s)/telecom area(s) is implemented?		Record and Upload

Table 5.14: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

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

Table 5.15: Scoring criteria

5.3. 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.

5.3.1. 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 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 checklist:** 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 and Upload

Table 5.16: Compliance checklist

iv. Scoring criteria: The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	4	If equipment like DAS, RRU, Base Station, etc. supporting 5G **and** 4G technology are installed in the property for mobile connectivity
2.	2	If equipment like DAS, RRU, Base Station, etc. supporting 4G **or** 5G technology are installed in the property for mobile connectivity

Table 5.17: Scoring criteria

5.3.2. 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 checklist: 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 and Upload

Table 5.18: Compliance checklist

iv. Scoring criteria: The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	3	If installed infrastructure supports future bands for 4G and 5G technology and/or Wi-Fi network as per the extant National Frequency Allocation Plan issued by DoT.
2.	2	If installed infrastructure supports future bands for 4G technology and/or Wi-Fi network as per the extant National Frequency Allocation Plan issued by DoT.
3.	1	If installed infrastructure supports future bands for 4G technology or Wi-Fi network as per the extant National Frequency Allocation Plan issued by DoT.

Table 5.19: Scoring criteria

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

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.

i. **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.

ii. **Compliance checklist:** 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 and Upload

Table 5.20: Compliance checklist

iii. Scoring criteria: The DCRA shall award score against this sub-criterion as follows:

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

Table 5.21: Scoring criteria

5.4. 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.

5.4.1. 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 capacity check:**

1. Record the provisioned Bandwidth capacity in the property for each service provider.
    i. BW capacity on fiber
    ii. BW capacity on wireless
    iii. BW on any other media (please specify)

c. **Supporting documents:**

1. Fiber cable details from 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 checklist:** 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/telecom area		Record and Upload

Table 5.22: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Criteria
1.	10	Score Awarded = $\left[\dfrac{(5) *(\text{No. of wireline service providers having fiber backhaul})}{(\text{No. of wireline service providers present in the property})}\right]$ **+** $\left[\dfrac{(5) *(\text{No. of wireless service providers having fiber backhaul})}{(\text{No. of wireless service providers present in the property})}\right]$

Table 5.23: Scoring criteria

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

i. **Objective:** Sub-criterion assesses whether high-capacity fiber-optic infrastructure is extends from the telecommunication room/ transmission room/telecommunication area up to the end-users within a property. The aim is to facilitate the extension of digital connectivity to the residents, businesses, and offices. 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)/telecom area(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/telecom area 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 5.24: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If fiber connectivity is extended from telecommunication room/ transmission room/telecommunication area to all user units within the property
2.	4	If fiber connectivity is extended from telecommunication room/ transmission room/telecommunication area to a minimum of 75% of user units within the property
3.	3	If fiber connectivity is extended from telecommunication room/ transmission room/telecommunication area to a minimum of 50% of user units within the property
4.	2	If fiber connectivity is extended from telecommunication room/ transmission room/telecommunication area to a minimum of 30% of user units within the property

Table 5.25: Scoring criteria

5.4.3. 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 checklist:** 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 5.26: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If fiber connectivity is extended in each room/ office/ commercial space of all user units within the property
2.	4	If fiber connectivity is extended in each room/ office/ commercial space of minimum 75% of user units within the property
3.	3	If fiber connectivity is extended in each room/ office/ commercial space of minimum 50% of user units within the property
4.	2	If fiber connectivity is extended in each room/ office/ commercial space of minimum 30% of user units within the property

Table 5.27: Scoring criteria

5.5. 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.

5.5.1. 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.

ii. **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.

iii. **Compliance checklist:** 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

S. No.	Item description	Compliance (Yes/ No)	Record maintenance requirement (Upload/ DCRA level)
2.	Network integration certificates/test reports		Record
3.	Service subscription status		Record and Upload

Table 5.28: Compliance checklist

iv. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	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 5.29: Scoring criteria

5.5.2. 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 measured as per methodology in section 5.6. Having multiple mobile service providers ensures users have reliable network coverage, high-quality service, and reduced congestion, particularly in high-density areas like commercial properties, 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 property.

        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. Walk/drive test results and/or RF coverage map in the property

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

iii. **Compliance checklist:** 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.	Walk/drive test results and/or RF coverage map in the property		Record and Upload
2.	Network performance test results from multiple operators		Record
3.	Agreements signed with Telecom Service Providers (without commercial details)		Record

Table 5.30: Compliance checklist

iv. Scoring criteria: The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	7.5	If 3 or more mobile service providers individually have overall more than 75% coverage (RSRP ≥ -110 dBm) for 4G/5G services in the property either through integration with DCI or otherwise.
2.	5	If at least two mobile service providers individually have overall more than 75% coverage (RSRP ≥ -110 dBm) for 4G/5G services in the property either through integration with DCI or otherwise.
3.	2	If at least one mobile service providers have overall more than 75% coverage (RSRP ≥ -110 dBm) for 4G/5G services in the property either through integration with DCI or otherwise.

Table 5.31: Scoring criteria

5.6. 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 including lifts and basements. 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)'*.

To assess service performance for mobile (data and voice services) and Wi-Fi services (data services), at least one sample for each of 5x5 meter or less size of tile size will be collected as far as feasible for respective service provider. For example, if the total public area of the property is 10000 square meters, then a minimum of 400 samples in each day are to be collected for relevant parameters. TRAI App shall be used for the testing of coverage and download speeds. To calculate the download speeds for mobile and Wi-Fi services, all the download speed samples shall be arranged in descending order (starting highest download speed recorded during entire assessment period) and the 80th percentile value, arrived after such arrangement, shall be considered the minimum download speed. For illustration, if a total of 1200 samples have been collected during the assessment period, then these values

shall be arranged in descending order and 1200*0.8=960th value of download speed shall be taken as minimum download speed for the mobile or Wi-Fi service.

For assessment of voice service performance, a structured and repeatable methodology shall be followed to measure key parameters. During the assessment, one test device (call terminating) will be placed at a fixed location in the property and other device (call originating) shall be used for sample collection around different areas of the property as per sampling methodology. Each test call shall begin with dial initiation, and a maximum of 15 seconds shall be allowed for the call to be successfully established. Calls not connected within this duration shall be recorded as failed attempts. For calls that are successfully established, the call shall be maintained for a duration of 90 to 120 seconds to observe call stability and identify any premature disconnections. After completion of the call duration, the call shall be normally terminated. A wait time of 15 seconds shall be observed before initiating the next call. This process shall be repeated in accordance with the sampling plan. The same methodology shall be referred to in the subsequent sections where Call Setup Time, Call Setup Success Rate, and Call Drop Rate are defined and calculated. The DCRA shall use industry-standard tools for assessment of voice service performance. Further, DCRA must ensure using the same tool for evaluating all service providers within a property to assess voice service performance.

Call Setup Time (15 Sec)	Call Duration (90-120 Sec)	Wait Time (15 Sec)

| 00:00:00 | 00:00:15 | 00:02:15 |
| Start Dial | Max Call Setup Time | Normal Call end |

Figure 5.1: Call Flow for measuring Voice services performance

5.6.1. Sub-Criteria: Mobile network coverage and performance in public areas of property
(Weightage – 6)

i. **Objective:** The mobile network performance in public areas (e.g., common area, 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, lifts, basements, and entrances using industry standard tools.

b. Assess data speed and voice call quality over minimum three days (preferably 10 am to 8 pm with samples uniformly distributed covering peak hours [10 am to 12 noon and 6 pm to 8 pm] in property) using prescribed methodology for each service provider whose coverage is available on the property and accounted under criteria '5.5- *Availability of Service Providers'*. Measurements to be carried out shall include peak as well as off-peak hours.

c. The call setup time, call setup success rate and call drop rate, for voice services, will be measured as per the measurement methodology prescribed in section 5.6.1. ii. d. Number of test samples and methodology shall be as prescribed in section 5.6 above.

d. The following methodology shall be used for calculating call setup success rate, call drop rate and call setup time:

   1. **Call setup success rate:** Call Setup Success Rate is defined as the ratio of Established Calls to Call Attempts. 'Established Calls' mean the following events have happened in call setup:
      (a) Call attempt is made
      (b) The signaling channel is allocated
      (c) The call is routed to the outwards path of the terminating network
      (d) An alert signal is received by caller in the form of ring back tone, busy tone, or an announcement.

      CSSR = (Total Call Established/ Total Call Attempt) *100

   2. **Call Drop rate:** Call drop represents the service provider network's ability to maintain a call once it has been successfully established. This parameter shall include both incoming calls and outgoing calls which, once they have been established and have an assigned traffic channel/ bearer, are dropped, or interrupted before their normal completion by the user, the cause of the early termination being within the service provider's network

      Call Drop Rate = (Total Call Drop/Total Call Established) *100

   3. **Call setup time:** Time taken from call initiate to call alerting/ringing.

      Call Setup Time = T2- T1

      T2- Ringing (VoLTE/VoNR),
      T1- Invite (VoLTE/VoNR)

iii. **Supporting documents:**

   1. Walk/drive test results and/or RF coverage map of public areas
   2. Speed test logs and call setup time, call setup success rate and call drop rate reports.

iv. **Compliance checklist:** 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.	Walk/drive test results and/or RF coverage map of public areas		Record and Upload
2.	Speed test logs, call setup time, call setup success rate and call drop rate		Record and Upload
3.	Speed and coverage samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 5.32: Compliance checklist

v. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
Part A		
1.	4	If at least 3 service providers individually have overall more than 85% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in public areas (including common area, lifts, and basements) with minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
2.	3	If at least two service providers individually have overall more than 85% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in public areas (including common area, lifts, and basements) with minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
3.	2	If at least one service provider has overall more than 85% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in public areas (including common area, lifts, and basements) with minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.

S. No.	Score	Compliance Requirement
Part B		
1.	2	If call drop rate ≤ 2% **and** call setup success rate ≥ 98% for each service provider
2.	1	If call drop rate ≤ 2% **or** call setup success rate ≥ 98% for each service provider
Note 1: Refer methodology in Section 5.6 for calculation of minimum download speed. **Note 2:** This sub-criterion is evaluated in two parts — Part A and Part B. The property shall be assessed separately under each part. The overall score for this sub-criterion shall be the sum of the scores awarded in Part A and Part B.		

Table 5.33: Scoring criteria

5.6.2. Sub-Criteria: Secure public Wi-Fi network coverage and performance in public areas of property
(Weightage – 4)

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, lifts, basements, and open seating spaces.

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

c.   Conduct speed and latency tests covering peak hours (10 am to 12 noon and 6 pm to 8 pm) over minimum three days (preferably 10 am to 8 pm) using industry standard tools using prescribed methodology.

iii. **Supporting documents:**

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

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

iv. **Compliance checklist:** 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 speed test results		Record and Upload
2.	Wi-Fi security audit reports		Record
3.	Speed samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 5.34: Compliance checklist

v. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	4	If minimum download speed of 20 Mbps is available from Wi-Fi in public or common area of the property (including lifts and basements).
2.	2	If minimum download speed of 10 Mbps is available from Wi-Fi in public or common area of the property (including lifts and basements).
Note: Refer methodology in Section 5.6 for calculation of minimum download speed.		

Table 5.35: Scoring criteria

5.6.3. 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. Assess data speed and voice call quality over minimum three days (preferably 10 am to 8 pm with samples uniformly distributed covering peak hours [10 am to 12 noon and 6 pm to 8 pm] in property) using prescribed methodology for each service provider whose coverage is available on the property and accounted under criteria '5.5- Availability of Service Providers'. Measurements to be carried out shall include peak as well as off-peak hours.

c. The call setup time, call setup success rate and call drop rate, for voice services, will be measured as per the measurement methodology prescribed in section 5.6.3. ii. d. Number of test samples and methodology shall be as prescribed in section 5.6 above.

d. The following methodology shall be used for calculating call setup success rate, call drop rate and call setup time:

1. **Call setup success rate:** Call Setup Success Rate is defined as the ratio of Established Calls to Call Attempts. 'Established Calls' mean the following events have happened in call setup:

    (a) Call attempt is made

    (b) The signaling channel is allocated

    (c) The call is routed to the outwards path of the terminating network
    (d) An alert signal is received by caller in the form of ring back tone, busy tone, or an announcement.

    CSSR = (Total Call Established/ Total Call Attempt) *100

2. **Call Drop rate:** Call drop represents the service provider network's ability to maintain a call once it has been successfully established. This parameter shall include both incoming calls and outgoing calls which, once they have been established and have an assigned traffic channel/ bearer, are dropped, or interrupted before their normal completion by the user, the cause of the early termination being within the service provider's network

   Call Drop Rate = (Total Call Drop/Total Call Established) *100

3. **Call setup time:** Time taken from call initiate to call alerting/ringing.

   Call Setup Time = T2- T1

   T2- Ringing (VoLTE/VoNR),
   T1- Invite (VoLTE/VoNR)

iii. **Supporting documents:**

   1. Walk/drive test results and/or RF coverage map of the area under test

   2. Speed test logs and call setup time, call setup success rate and call drop rate reports.

iv. **Compliance checklist:** 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.	Walk/drive test results and/or RF coverage map of the area under test		Record and Upload
2.	Speed test logs, call setup time, call setup success rate and call drop rate		Record and Upload
3.	Speed and coverage samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 5.36: Compliance checklist

v. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
Part A		
1.	4	If at least 3 service providers individually have overall more than 80% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services 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 individually have overall more than 70% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services 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 overall more than 50% mobile coverage (RSRP ≥ -110 dBm) for 4G/5G services in non-public areas, with average minimum download speed of 10Mbps for 4G or 100 Mbps for 5G technology as applicable.
Part B		
1.	1	If call drop rate ≤ 2% **and** call setup success rate ≥ 98% for each service provider
2.	0.5	If call drop rate ≤ 2% **or** call setup success rate ≥ 98% for each service provider
Note 1: Refer methodology in Section 5.6 for calculation of minimum download speed. **Note 2:** This sub-criterion is evaluated in two parts — Part A and Part B. The property shall be assessed separately under each part. The overall score for this sub-criterion shall be the sum of the scores awarded in Part A and Part B.		

Table 5.37: Scoring criteria

5.6.4. 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 speed and latency tests covering peak hours (10 am to 12 noon and 6 pm to 8 pm) over minimum three days (preferably 10 am to 8 pm) using industry standard tools using prescribed methodology.

iii. **Supporting documents:**

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

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

iv. **Compliance checklist:** 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 speed test results		Record and Upload
3.	Speed samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 5.38: Compliance checklist

v. **Scoring criteria:** The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If minimum download speed of 20 Mbps is available from Wi-Fi in non-public area of the property.
2.	3	If minimum download speed of 10 Mbps is available from Wi-Fi in non-public area of the property.
3.	2	If minimum download speed of < 10 Mbps and > 2 Mbps is available from Wi-Fi in non-public area of the property.
Note: Refer methodology in Section 5.6 for calculation of minimum download speed.		

Table 5.39: Scoring criteria

5.6.5. 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 App). Conduct tests during the prescribed time window (preferably 10 am to 8pm) including peak traffic hour(s) (10 am to 12 noon and 6 pm to 8 pm) at least at five different user locations distributed across the property as far as possible. Minimum five test samples per location shall be collected.

    b. To calculate the average download speeds, all the download speed samples shall be arranged in descending order (starting highest download speed recorded during entire assessment period) and the 90th percentile value, arrived after such arrangement, shall be considered the average download speed. For illustration, if a total of 120 samples have been collected during the assessment period, then these values shall be arranged in descending order and $120*0.9=108^{th}$ value of download speed shall be taken as average download speed.

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

iii. **Compliance checklist:** 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
2.	Speed samples mapped on the Layout maps (floors/areas)		Record and Upload

Table 5.40: Compliance checklist

iv. Scoring criteria: The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	5	If download speed of any two wireline network is more than 500 Mbps as calculated above [section 5.6.5 ii. b.]
2.	4	If the download speed of any two wireline network is more than 250 Mbps as calculated above [section 5.6.5 ii. b.]
3.	3	If the download speed of any two wireline network is more than 100 Mbps as calculated above [section 5.6.5 ii. b.]
4.	2	If the download speed of any two wireline network is more than 50 Mbps as calculated above [section 5.6.5 ii. b.]

Table 5.41: Scoring criteria

5.7. User Experience (Weightage – 10)

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.

5.7.1. Sub-Criteria: User feedback on digital connectivity experience (Weightage – 10)

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 checklist:
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 5.42: Compliance checklist

v. Scoring criteria:
The DCRA shall award score against this sub-criterion as follows:

S. No.	Score	Compliance Requirement
1.	10	If 80% of users provide overall positive experience for digital connectivity in the property
2.	8	If 70% of users provide overall positive experience for digital connectivity in the property
3.	6	If 60% of users provide overall positive experience for digital connectivity in the property
4.	4	If 50% of users provide overall positive experience for digital connectivity in the property
5.	2	If 40% of users provide overall positive experience for digital connectivity in the property

Table 5.43: Scoring criteria

Note: Overall positive experience refers to the user feedback provided in the form prescribed under Appendix 11.4 of this Manual. In this context, if a user has rated the Overall Experience as 4 or higher, the experience shall be considered as positive.

5.8. Summary of Rating Score

After assessing 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. It is to be noted that the scores against each sub-criteria will be awarded strictly as per the scoring criteria given above.

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Score awarded by DCRA [e]
5.1	Provision in power infrastructure for ensuring reliable digital connectivity	10	5.1.1 Redundancy of power source	2	
			5.1.2 UPS power backup for DCI	4	
			5.1.3 Power continuity monitoring	2	
			5.1.4 Building Management System	2	
5.2	Digital Connectivity Infrastructure Resilience	10	5.2.1 Availability of alternate entry paths for digital connectivity infrastructure	3	
			5.2.2 Non-flooding measures for DCI installation	3	
			5.2.3 Implementation of redundancy in power source and DCI paths	4	
5.3	Future Readiness of Digital Connectivity Infrastructure	10	5.3.1 Availability of the latest generation of mobile connectivity	4	
			5.3.2 Support for future bands	3	
			5.3.3 Upgradability of wireline DCI	3	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Score awarded by DCRA [e]
5.4	Provision of Wired Connectivity infrastructure	20	5.4.1 Backhaul fibre connectivity (service provider to property)	10	
			5.4.2 Fibre connectivity till user premises	5	
			5.4.3 Fibre connectivity in each room or office or commercial space	5	
5.5	Availability of Service Providers	15	5.5.1 Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure	7.5	
			5.5.2 Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure	7.5	
5.6	Service Performance	25	5.6.1 Mobile network coverage and performance in public areas of property	6	
			5.6.2 Secure public Wi-Fi network coverage and performance in public areas of property	4	
			5.6.3 Mobile network coverage and performance in non-public areas	5	

Criteria No.	Criteria [a]	Weightage [b]	Sub-Criteria [c]	Sub Criteria Weightage [d]	Score awarded by DCRA [e]
			5.6.4 Secure public Wi-Fi network coverage and performance in non-public areas	5	
			5.6.5 Average download speed of different wireline network(s) in respective highest speed plan	5	
5.7	User Experience	10	5.7.1 User feedback on digital connectivity experience	10	

Table 5.44: Summary of Rating Score

6. 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.

6.1. Classification of Ratings

Following the detailed assessment process outlined in Chapter 4 and 5 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.	>=25-32	★
2.	>32-40	★★⯪
3.	>40-48	★★
4.	>48-56	★★★⯪
5.	>56-64	★★★
6.	>64-72	★★★★⯪
7.	>72-80	★★★★
8.	>80-88	★★★★★⯪
9.	More than 88	★★★★★

Table 6.1: Rating Scorecard

6.2. 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.

The validity period for Category 'A' Category and 'B' properties shall be as prescribed by the Authority from the date of issue of the rating certificate.

6.3. Reassessment Process

To ensure the continued accuracy and relevance of digital connectivity ratings, rating platform 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.

6.3.1. 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

6.4. 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.

6.4.1. 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.

6.4.2. 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.

6.4.3. 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.

7.   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 properties. This mechanism ensures that all stakeholders, including property managers, 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.

7.1.   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."*

7.2.   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.

7.3. 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.

8. 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 chapter 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.

8.1. 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.

8.2. Review of Appeal by DCRA

Once an appeal is submitted, the Digital Connectivity Rating Agency (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.

8.3. 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 clearly indicating the point of appeal against the DCRA decision

   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.

8.4. 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.

9. 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.

9.1. 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, 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.

10. 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 service providers in designing and implementing digital connectivity solutions that meet current and future technological requirements while ensuring seamless user experience.

10.1. 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/telecom area, network equipment and distribution points within the building.

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

d. **Collaboration with Service Providers:** Engaging with 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.

10.2. 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.

10.3. 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.

11. Appendix

11.1. 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 the framework include:

a. **Availability of Connectivity Options**: Access to mobile networks (2G/3G/4G/5G), Wi-Fi, fiber broadband, and private networks.

b. **Indoor Coverage Quality**: Signal strength and coverage within the building, including basements, elevators, and floors.

c. **Digital Infrastructure Readiness**: Deployment of in-building solutions (IBS), distributed antenna systems (DAS), small cells and optical fiber backbones.

d. **Network and power Redundancy**: Availability of backup connectivity and power sources to ensure uninterrupted services.

e. **Future-Readiness**: Scalability and ease of integration with advanced technologies, including 5G and IoT solutions.

iv. Who benefits from this rating system?

a. **Property Managers:** Gain recognition and competitive advantage by providing high-quality digital infrastructure.

b. **Consumers**: Enjoy uninterrupted connectivity for work, entertainment, and communication.

c. **Service Providers**: Identify opportunities for infrastructure upgrades and improved service delivery.

d. **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 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 property types, including:

a. Residential complexes

b. Office spaces and commercial properties

c. Malls and retail outlets

d. Educational institutions

e. Healthcare facilities

f. Airports

g. Metro rail

h. Stadiums and open spaces

vii. What is the objective of classification of Properties for Rating?

The objective of classification or grouping of properties is solely for the purpose of applying the rating criteria which are relevant to assess the digital connectivity in the respective category or group of properties.

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

Property managers may encounter the following challenges:

a. Limited infrastructure for in-building solutions such as DAS or fiber backbone.

b. High costs are associated with upgrading outdated systems.

c. Difficulty in integrating services from multiple telecom service providers.

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

ix. **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 properties.

x. **How can property manager apply for the Digital Connectivity Rating?**

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

a. One time registration on rating platform

b. Apply for rating of property and provide relevant details

c. Choose the DCRA of your choice

d. Submit the application

e. The rating process starts.

xi. **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.

xii. **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:

a. Enhancing broadband penetration

b. Promoting ICT readiness across sectors

c. 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.

xiii. **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:

a. Smart building technologies

b. Energy-efficient network equipment

c. Seamless integration of IoT devices and 5G networks

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

xiv. **What are the key provisions that the DCRA must evaluate to assess compliance with the applicable Model Building Bye-Laws (MBBL) and National Building Code (NBC)?**

The DCRA needs to evaluate whether the property's Digital Connectivity Infrastructure (DCI) has been provided in the property as per the requirement of the latest applicable National Building Code (NBC) issued by Bureau of Indian Standards (BIS) and Model Building Bye-Laws (MBBL) issued by Ministry of Housing and Urban Affairs, Government of India (MoHUA).

As per Regulation 24, for the purposes of rating for digital connectivity, MBBL issued by MoHUA shall be referred in cases where Building Byelaws of Cities/State or Union Territory do not have provisions for digital connectivity infrastructure.

For clarity and uniformity in assessment, the Authority has published a separate "Checklist for compliance to MBBL and NBC in the Manual under Rating of Properties for Digital Connectivity Regulations, 2024". The DCRA shall undertake evaluation in accordance with the items and compliance impact specified in the said Checklist, as updated from time to time.

xv. **After a property is rated, how is it ensured that its performance remains consistent with the rating awarded?**

The rating platform will have provisions to collect feedback, with supporting evidence, from concerned stakeholders about maintenance or DCI performance issue, if any.

Based on the feedback received, DCRA can review the property's rating and update it, if necessary, as per provision of regulation 28. Before any change to the rating, the property manager will be given 90 days to resolve the issues or address the deficiencies communicated through the platform.

xvi. **How will the continuity of digital connectivity be ensured in the property in case there is a change in property ownership or property manager?**

The regulation 22 states that in case of change of property manager or property ownership, the property manager shall ensure smooth transfer of digital connectivity infrastructure to the new property manager for continuity of digital connectivity till the validity of the rating certificate awarded in respect of the property, and may include suitable provisions in the agreement to ensure compliance of the provisions of the regulations and terms and conditions of the rating certificate, post transfer of the property. The failure of the property manager to intimate the change of property manager or ownership to the Authority shall be considered as contravention of the regulations.

xvii. **If a property undergoes expansion, how is the existing rating received for the property treated and what steps can the property manager take to cover the expansion?**

In the event of a property expansion, the existing rating remains valid only for the portion originally assessed.

However, the property managers are encouraged to apply for a re-rating for entire property or new rating for the expanded property area. (Refer regulation 29)

xviii. **What is the objective of introducing design-stage assessment for properties under construction?**

The objective of introducing design-stage assessments for properties under construction is to provide structured visibility of Digital Connectivity Infrastructure (DCI) preparedness at the planning and construction stage, when properties are often marketed and sold. This mechanism enables Property Managers to integrate digital connectivity requirements into the building design in a systematic manner and allows prospective buyers and tenants to understand the intended level of digital connectivity.

xix. **Can the "Designed for XX Stars" certificate be used in marketing and promotional materials?**

Yes, the Property Manager may use the "Designed for XX Stars" certificate for marketing purposes during the construction phase, provided it is clearly represented as a design-stage assessment only. The certificate shall not be presented as a final Digital Connectivity Rating and shall not mislead consumers regarding the final rating outcome.

xx. **Will the design-stage star level be publicly visible on the rating platform?**

Yes. The design-stage star level assessed by the DCRA shall be displayed on the rating platform with a clear indication that it is based on design-stage evaluation and not a final

Digital Connectivity Rating. This ensures transparency while preserving clarity between design-stage preparedness and final rating.

xxi. **Can the target star rating declared by the Property Manager guarantee the final rating?**

No. The target star rating declared by the Property Manager at the application stage represents an intended level of digital connectivity preparedness. The final Digital Connectivity Rating shall be determined solely on the basis of on-ground assessment conducted during Due Diligence Stage–II after completion of construction and implementation of Digital Connectivity Infrastructure.

xxii. **What is the objective of introducing the Optional Digital Connectivity Audit?**

The objective of introducing the Optional Digital Connectivity Audit is to provide Property Managers with an opportunity to assess the present level of Digital Connectivity Infrastructure (DCI) in their property for internal evaluation and improvement purposes, without immediately applying for a Digital Connectivity Rating under the Regulations. This mechanism is intended to encourage proactive enhancement of digital connectivity and wider adoption of best practices, while preserving the integrity of the formal rating framework.

xxiii. **Is the Optional Digital Connectivity Audit mandatory before applying for a Digital Connectivity Rating?**

No. Participation in an Optional Digital Connectivity Audit is entirely voluntary. It is not a prerequisite for applying for a Digital Connectivity Rating and shall have no bearing on the outcome of any rating assessment conducted under the Regulations.

xxiv. **Does the Optional Digital Connectivity Audit result in a rating or certificate under the Regulation?**

No. The Optional Digital Connectivity Audit does not constitute a Digital Connectivity Rating, provisional rating, interim rating, or certification under the Regulations. It is conducted outside the formal rating framework and is intended solely for internal use by the Property Manager.

xxv. **What is the role of the Rating platform in the Optional Digital Connectivity Audit?**

The Rating Platform facilitates only the initiation of the audit request and enables status tracking for transparency in timelines. The platform does not evaluate, validate, review, or endorse the audit findings. The audit engagement, scope, timelines, and fee structure are mutually agreed between the Property Manager and the selected DCRA.

Can the indicative score or indicative star level mentioned in the audit report be used for marketing or public communication?

No. Any indicative score or indicative star level provided in the audit report is non-binding and intended solely for internal reference. It shall not be represented as a Digital Connectivity Rating under the Regulations and shall not be used in marketing, promotional materials, or public communication as an official rating.

11.2. 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. Model Building Bye-Laws (MBBL), 2016 as amended from time to time.

11.3. Documents Checklist

Master checklist of supporting documents from property manager to be recorded and uploaded by Digital Connectivity Rating Agency (DCRA) as applicable depending upon the category of property i.e. Category 'A' or Category 'B' is as follows:

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
1.	Compliance to Applicable Model Building Bye Laws (MBBL) and National Building Code (NBC) for Digital Connectivity	Approved Digital Connectivity Infrastructure (DCI) design	Approved DCI design documents by competent authority	Record and Upload
2.			Design drawings certified by competent authority	Record
3.			Design compliance with MBBL and NBC standards	Record and Upload
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 and Upload
7.			Testing and Commissioning certificates for DCI as applicable	Record

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
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/telecom areas	Record and Upload
10.		Provision for expansion of mobile and wireline connectivity	Updated network diagrams	Record and Upload
11.			Future expansion plans	Record and Upload
12.		Ease of access of DCI installed for repair or maintenance	Site photos showing maintenance pathways	Record and Upload
13.			Maintenance checklists	Record
14.	Provision in Power Infrastructure, over and above MBBL or NBC requirements, for Ensuring Reliable Digital Connectivity	Redundancy of power source	Power layout diagrams	Record and Upload
15.			Load switchover testing reports	Record and Upload
16.		UPS power backup for DCI	Electrical system line diagram including redundant input sources and UPS system(s)	Record and Upload
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

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
20.			Whether duration of UPS backup matches with available test reports with full DCI load?	Record and Upload
21.		Power continuity monitoring	Monitoring system high level diagram	Record and Upload
22.			Capture monitoring system dashboard screenshot	Record and Upload
23.		Building Management System	BMS system architecture diagrams	Record and Upload
24.			Test report on DCI power systems, fire alarms and HVAC integration with BMS	Record and Upload
25.			Sample test report on detection and notification of main power supply failure and takeover by generator/UPS for DCI	Record and Upload
26.	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 and Upload
27.			Pathway layout diagrams from ducts to telecom room(s)/telecom area(s) for fiber/ DCI	Record and Upload
28.		Non-flooding measures for DCI installation	Site photos of whether DCI/telecom room(s)/telecom area(s) are above ground floor as per design and implementation?	Record and Upload
29.			Site photos of whether key power systems like UPS/ Generators for DCI are installed on ground or higher floor with non-flooding consideration?	Record and Upload

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
30.			Site photos of whether drainage system is implemented as per design layout?	Record and Upload
31.		Implementation of redundancy in power source and DCI paths	Whether DCI is supported with redundant power sources (Generator/UPS)?	Record
32.			Whether power system network layout for DCI is implemented with path diversity?	Record and Upload
33.			Whether sample test reports demonstrate testing of redundancy?	Record and Upload
34.			Whether path diversity for fiber and other cables (DTH/ethernet as applicable) across the building blocks, basements and towers from telecom/digital connectivity infrastructure room(s)/telecom area(s) is implemented?	Record and Upload
35.	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
36.			Photographs of installed latest generation mobile connectivity equipment	Record and Upload
37.		Support for future bands	Bill of Material (BoM) installed at building along with datasheets for relevant equipment	Record

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
38.			Whether DCI supports future bands for mobile or Wi-Fi network as applicable as per datasheets?	Record and Upload
39.		Upgradability of wireline DCI	Upgradability of existing wireline DCI equipment's (switches/routers/splitters/PON etc.) and relevant cables	Record
40.			Whether the bandwidth supported through optical fiber with speed 1 Gbps or higher?	Record and Upload
41.	Provision of Wired Connectivity Infrastructure	Backhaul fiber connectivity (service provider to property)	Fiber testing results	Record
42.			Photographs of fiber termination point at main telecom room/telecom area	Record and Upload
43.		Fiber connectivity till user premises	Fiber layout diagrams up to user premises	Record and Upload
44.			Sample fiber test reports confirming connectivity to each user premise	Record and Upload
45.		Fiber connectivity in each room or office or commercial space	Network layout diagram for user units showing fiber terminations	Record
46.			Sample test reports for fiber terminations testing	Record and Upload

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
47.	Availability of Service Providers	Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure	Telecom/Internet Service Provider (ISP) Agreements	Record
48.			Network integration certificates/test reports	Record
49.			Service subscription status	Record and Upload
50.		Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure	Walk/drive test results and/or RF coverage map in the property	Record and Upload
51.			Network performance test results from multiple operators	Record
52.			Agreements signed with Telecom Service Providers (without commercial details)	Record
53.	Service Performance	Mobile network coverage and performance in public areas of property	Walk/drive test results and/or RF coverage map of public areas	Record and Upload
54.			Speed test logs, call setup time, call setup success rate and call drop rate	Record and Upload
55.			Speed and coverage samples mapped on the Layout maps (floors/areas)	Record and Upload

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
56.		Secure public Wi-Fi network coverage and performance in public areas of property	Wi-Fi speed test results	Record and Upload
57.			Wi-Fi security audit reports	Record
58.			Speed samples mapped on the Layout maps (floors/areas)	Record and Upload
59.		Mobile network coverage and performance in non-public areas	Walk/drive test results and/or RF coverage map of the area under test	Record and Upload
60.			Speed test logs, call setup time, call setup success rate and call drop rate	Record and Upload
61.			Speed and coverage samples mapped on the Layout maps (floors/areas)	Record and Upload
62.		Secure public Wi-Fi network coverage and performance in non-public areas	Wi-Fi security certifications	Record
63.			Wi-Fi speed test results	Record and Upload
64.			Speed samples mapped on the Layout maps (floors/areas)	Record and Upload
65.		Average download speed of different wireline	Speed test results with timestamps	Record and Upload

S. No.	Criteria	Sub Criteria	Supporting document evidence	Record maintenance requirement (Upload/ DCRA level)
66.		network(s) in respective highest speed plan	Speed samples mapped on the Layout maps (floors/areas)	Record and Upload
67.	User Experience	User feedback on digital connectivity experience	User feedback logs from helpdesk systems	Record and Upload

11.4. 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 assessing the level of digital connectivity inside the property for award of Star rating under TRAI regulations.

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

(c) Type of property: ☐ Residential   ☐ Commercial ☐ Government Properties
                        ☐ Shopping mall   ☐ Stadium   ☐ Hospitality
                        ☐ Transport corridor ☐ Other – Please specify:

(To be filled by DCRA)

*Kindly provide your feedback on the scale of 1-5 by writing relevant number in the box against respective questions. Score **1 (poor)** being the lowest, **2 (average**), **3 (good**), **4 (very good)** and **5 (Excellent)** being the highest.*

	Provide rating between 1 to 5

1. Mobile Service Performance
i.   How would you rate your mobile voice call experience? ☐
ii. Are you satisfied with mobile internet performance? ☐

2. 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? ☐

3. 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? ☐

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

5. Suggestions for Improvement

_____

Signature of the end user/ consumer   Signature of DCRA representative
Name   :
Mobile No. :
Email-ID   :

11.5. Template for declaration of maximum chargeable fee by DCRA (As per regulation)

The below table covers the template for declaration of maximum chargeable fee by Digital Connectivity Rating Agency (DCRA) as per the Section I - "Code of Conduct for DCRAs" clause (vii) "Clear fee structure" in the "Rating of Properties for Digital Connectivity Regulations, 2024":

S. No.	Classification	Category or Group	Type of Property	Property Area in sq.ft./ length in km	Maximum chargeable fee by DCRA (in ₹ / sq.ft.)
1.	Residential	A	Apartments, independent houses, gated communities or societies, etc.	50,000 - 100,000 sq.ft.	
				>100,000 - 500,000 sq.ft.	
				>500,000 - 1000,000 sq.ft.	
				>1000,000 sq.ft.	
2.	Government Properties	A	All properties of the Central Government, the State Government, Courts, Public Sector Undertakings, Local Bodies, Heritage Sites, etc.	50,000 - 100,000 sq.ft.	
				>100,000 - 500,000 sq.ft.	
				>500,000 - 1000,000 sq.ft.	
				>1000,000 sq.ft.	
3.	Commercial Establishments	A	Commercial office complex, shopping malls, industrial estates, SEZs, convention centres, Hospitals, Hotels, Educational Institutions, etc.	50,000 - 100,000 sq.ft.	
				>100,000 - 500,000 sq.ft.	
				>500,000 - 1000,000 sq.ft.	
				>1000,000 sq.ft.	
4.	Other private or public areas	B	Airport, Bus Station, Railway	50,000 - 100,000 sq.ft.	

S. No.	Classification	Category or Group	Type of Property	Property Area in sq.ft./ length in km	Maximum chargeable fee by DCRA (in ₹ / sq.ft.)
			Station, multi-modal logistic parks etc.	>100,000 - 500,000 sq.ft.	
				>500,000 - 1000,000 sq.ft.	
				>1000,000 sq.ft.	
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	50,000 - 100,000 sq.ft.	
				>100,000 - 500,000 sq.ft.	
				>500,000 - 1000,000 sq.ft.	
				>1000,000 sq.ft.	
6.	Transport corridors	B	Expressways, Highways, Railways routes, Metro corridors etc.	100-500 km	
				>500-1000 km	
				>1000 km	

Note: The 'Property Area' includes all areas like ground, basements, and other covered /uncovered floors used by the residents or occupants or visitors.

***

Declaration by Property Manager for Under-Construction Property

1. Declaration of Target Digital Connectivity Rating

I/ We, the undersigned, hereby declare that the DCI design of above-mentioned under-construction property is **targeted to achieve Digital Connectivity Rating of _____ Star(s)** under the **Rating of Properties for Digital Connectivity Regulations, 2024**.

I/ We understand that this target rating is **indicative** and that the **final rating shall be awarded solely on the basis of actual assessment** conducted by the concerned Digital Connectivity Rating Agency (DCRA) in accordance with the applicable Regulations and the Rating Manual.

2. Plan for Achieving the Declared Target Rating

I/ We further declare that, in addition to the standard requirements under the *Application for Rating of Property*, a **Sub-Criteria wise implementation plan** for achieving the declared target rating is being submitted along with this declaration.

The plan is provided in a **structured tabular format**, wherein details are specified against each applicable criterion and sub-criterion under the Digital Connectivity Rating framework, including:

  i.   the proposed measures, design provisions, or infrastructure planning to achieve compliance; and

  ii. the reference to relevant supporting documents.

All supporting documents referenced in the table are attached along with this declaration or uploaded on the Digital Connectivity Rating Platform, as applicable.

3. Sub-Criteria wise Plan and Supporting Documents *(to be filled by Property Manager)*:

Criteria No.	Criteria	Sub-Criteria	Target Score	Proposed Plan / Design Provision to Achieve Target Score	Reference Supporting Document / Response to Questions
1	Compliance to applicable Model Building Bye Laws (MBBL) and National Building Code (NBC) for digital connectivity	1.1 Approved DCI design		1. Provide compliance details based on "Checklist for compliance to MBBL and NBC" and attach with this declaration. 2. Any other details….	1. Approved design documents / building plan / layout plans etc. 2. "Checklist for compliance to MBBL and NBC" 2. Any other relevant document
		1.2 DCI implementation as per approved DCI design			
2	Provision in civil infrastructure, over and above MBBL and NBC requirements, for ensuring robust digital connectivity	2.1 Provision for expansion of telecom rooms and cable pathways		1. Does your property have provision for expansion of telecom room/ telecom areas, horizontal and vertical pathways in design documents / layout plans as per 4.2.1 of rating manual? 2. Any other details…	1. Approved design documents / building plan / layout plans etc. 2. Any other relevant document
		2.2 Provision for expansion of mobile and wireline connectivity		1. Is provision for expansion of mobile and wireline connectivity planned as per 4.2.2 of Rating Manual and present in design documents / layout plans etc.? 2. Any other details…	1. Approved design documents / building plan / layout plans etc. 2. Any other relevant document

Criteria No.	Criteria	Sub-Criteria	Target Score	Proposed Plan / Design Provision to Achieve Target Score	Reference Supporting Document / Response to Questions
		2.3 Ease of access of DCI installed for repair or maintenance		1. Is provision for physical accessibility and labelling planned as per 4.2.3 of Rating manual and present in design documents / layout plans etc.? 2. Any other details…	1. Approved design documents / building plan / layout plans etc. 2. Any other relevant document
3	Provision in power infrastructure, over and above MBBL or NBC requirements, for ensuring reliable digital connectivity	3.1 Redundancy of power source		1. Is Redundant power source planned for all digital connectivity services as per 4.3.1 of Rating Manual? 2. Any other details…	1. Power layout diagrams. 2. Any other relevant document
		3.2 UPS power backup for DCI		1. Is UPS power backup for important DCI components planned as per 4.3.2 of Rating Manual? 2. Any other details…	1. Electrical system line diagram 2. Any other relevant document
		3.3 Power continuity monitoring		1. Is Power monitoring system being implemented/provisioned as per 4.3.3 of Rating Manual? Will the dashboard in monitoring system cover end-to-end health status monitoring of all power system as per 4.3.3 of Rating Manual? 2. Any other details…	1. Monitoring system high level diagram 2. Any other relevant document
		3.4 Building Management System		1. Is BMS being implemented/provisioned as per 4.3.4 of Rating Manual? Is BMS integration planned to	1. BMS system high level diagram 2. Any other relevant document

Criteria No.	Criteria	Sub-Criteria	Target Score	Proposed Plan / Design Provision to Achieve Target Score	Reference Supporting Document / Response to Questions
				cover power, fire alarm and HVAC for telecom room(s)/ telecom area(s) in the property as per 4.3.4 of Rating Manual? 2. Any other details…	
4	Digital Connectivity Infrastructure Resilience	4.1 Availability of alternate entry paths for digital connectivity infrastructure		1. Is there provision of alternate duct and cable pathway routes till telecom rooms / telecom areas as per 4.4.1 of Rating Manual? 2. Any other details….	1. Ducts and Pathway layout diagram 2. Any other relevant document
		4.2 Non-flooding measures for DCI installation		1. Are non-flooding measures taken as per 4.4.2 of Rating Manual? 2. Any other details….	1. Design and layout documents 2. Any other relevant document
		4.3 Implementation of redundancy in power source and DCI paths		1. Is there provision of redundant paths for power system to DCI and fiber path in the property as per 4.4.3 of Rating Manual? 2. Any other details…	1. Power and cable layout diagrams 2. Any other relevant document
5	Future Readiness of Digital Connectivity Infrastructure	5.1 Availability of the latest generation of mobile connectivity		1. Whether the planned/installed equipment supports the latest generation of mobile connectivity as per 4.5.1 of the rating manual? 2. Any other details…	1. List of latest generation mobile connectivity equipment 2. Any other relevant document

Criteria No.	Criteria	Sub-Criteria	Target Score	Proposed Plan / Design Provision to Achieve Target Score	Reference Supporting Document / Response to Questions
		5.2 Support for future bands		1. Is there provision of supporting future bands in infrastructure as per 4.5.2 of Rating Manual? 2. Any other details…	1. BoM or List and datasheets of infrastructure installed /planned 2. Any other relevant document
		5.3 Upgradability of wireline DCI		1. Is there provision for planned fiber-optic network to be scaled and upgraded as per 4.5.3 of rating manual? 2. Any other details…	1. Document to demonstrate upgradability of wireline DCI 2. Any other relevant document
6	Provision of Wired Connectivity infrastructure	6.1 Backhaul fiber connectivity (service provider to property)		1. For how many different type of service providers have you provisioned backhaul fiber connectivity as per 4.6.1 of rating manual? 2. How many tie-ups with service providers do you have right now for the property? 3. Any other details…	
		6.2 Fiber connectivity till user premises		1. % of unit within the property planned for fiber connectivity as per 4.6.2 of the rating manual? 2. Any other details…	
		6.3 Fiber connectivity in each room or office or commercial space		1. % of unit within the property where fiber connectivity is planned in each room/ office/ commercial space as per 4.6.3 of the rating manual? 2. Any other details…	

Criteria No.	Criteria	Sub-Criteria	Target Score	Proposed Plan / Design Provision to Achieve Target Score	Reference Supporting Document / Response to Questions
7	Availability of Service Providers	7.1 Number of wireline Internet Service providers having integration with Digital Connectivity Infrastructure		1. For how many internet service providers have you provisioned capability to integrate with DCI as per 4.7.1 of the rating manual? 2. How many tie-ups with service providers do you have right now for the property? 3. Any other details…	
		7.2 Number of Mobile Service providers having coverage or integration with Digital Connectivity Infrastructure		1. For how many service providers is coverage planned for 4G/5G services in the property either through integration with DCI or otherwise as per 4.7.2 of rating manual? What is the expected coverage for each service provider? 2. How many tie-ups with service providers do you have right now for the property? 3. Any other details…	
8	Service Performance	8.1 Mobile network coverage and performance in public areas of property		1. For how many service providers is mobile coverage for 4G/5G services planned in public areas (including common area, lifts, and basements) of the property as per 4.8.1 of rating manual? 2. What is the expected mobile coverage and minimum download	

Criteria No.	Criteria	Sub-Criteria	Target Score	Proposed Plan / Design Provision to Achieve Target Score	Reference Supporting Document / Response to Questions
				speed for 4G/5G technology of each service provider in these areas as per 4.8.1 of rating manual? 3. Any other details…	
		8.2 Secure public Wi-Fi network coverage and performance in public areas of property		1. Is there provision of Wi-Fi coverage in public areas (including lifts and basements) of property as per 4.8.2 of rating manual? 2. What is the expected coverage and minimum download speed from Wi-Fi in public areas as per 4.8.2 of rating manual? For how many users is it being planned? 3. Any other details…	
		8.3 Mobile network coverage and performance in non-public areas		1. For how many service providers is mobile coverage for 4G/5G services planned in non-public areas of the property as per 4.8.3 of rating manual? 2. What is the expected mobile coverage and minimum download speed for 4G/5G technology of each service provider in these areas as per 4.8.3 of rating manual? 3. Any other details…	

Criteria No.	Criteria	Sub-Criteria	Target Score	Proposed Plan / Design Provision to Achieve Target Score	Reference Supporting Document / Response to Questions
		8.4 Secure public Wi-Fi network coverage and performance in non-public areas		1. Is there provision of Wi-Fi coverage in non-public areas of property as per 4.8.4 of rating manual? 2. What is the expected coverage and minimum download speed from Wi-Fi in non-public areas as per 4.8.4 of rating manual? For how many users is it being planned? 3. Any other details…	
		8.5 Average download speed of different wireline network(s) in respective highest speed plan		1. Are there provisions for wireline network in the property as per 4.8.5 of Rating Manual? 2. For how many wireline network or service providers have you provisioned capability to provide wireline network in the property and what is the expected download speed of wireline network as per 4.8.5 of Rating Manual? 3. Any other details…	
9	User Experience	9.1 User feedback on digital connectivity experience			

Notes:

i. The target scores indicated above are indicative and based on design-stage planning. Final scores shall be determined solely based on assessment during Due Diligence Stage II.

ii. Only applicable criteria and sub-criteria shall be filled, as per the classification of the property under **Category 'A' or Category 'B'**. For **Category 'B' properties**, Criteria No. 1 and Criteria No. 2 are not applicable and need not be filled in the above table.

iii. Details provided should be sufficient to demonstrate intent, feasibility, and design-stage compliance, without requiring final as-built evidence.

iv. In respect of those criteria and sub-criteria which involve parameters (such as network speed, coverage, no. of service providers etc.) that cannot be physically verified during the under-construction stage, the assessment shall be based on the structured responses provided in this declaration and the supporting documentary evidence submitted by the Property Manager. Such assessment shall be indicative in nature and subject to verification during Due Diligence Stage–II upon completion of construction and commissioning of Digital Connectivity Infrastructure.

v. Reference documents may include approved design documents, building plans, architectural drawings, layout plans, digital connectivity infrastructure designs, schematics, or other relevant technical documents related to Digital Connectivity Infrastructure.

I/ We hereby confirm that information provided in this declaration, the accompanying plan, and supporting documents are **true, correct, and complete** to the best of our knowledge and belief. I/ We shall extend full cooperation to the DCRA during assessment and comply with all applicable provisions of the Regulations and the Rating Manual.

(Signature of authorized signatory with seal if applicable)

Date:

<div align="right">

Name:_____

Designation:_____

Contact No:_____

E-mail Id:_____

</div>

[To be signed by duly authorised person on behalf of organization]

***

Indicative Template for Optional Digital Connectivity Audit Report

(The following template is illustrative in nature and indicates the minimum details that may be covered in an Optional Digital Connectivity Audit Report. DCRAs and Property Managers may mutually agree to include additional details, as appropriate.)

1. Basic Details

(At a minimum, the following details may be included:)

   (i)   Name of Property

   (ii)   Property Address

   (iii) Category of Property (Category 'A' / Category 'B')

   (iv) Name and contact details of Property Manager

   (v)   Name of DCRA Conducting Audit

   (vi) DCRA Registration ID (as per Rating Platform)

   (vii) Date(s) of Audit (start and completion)

   (viii) Any other relevant identification details

2. Disclaimer

(The report shall clearly indicate the following:)

   (i)   This Optional Digital Connectivity Audit has been conducted based on mutual engagement between the Property Manager and the DCRA.

   (ii)   This audit is intended solely for internal evaluation and improvement purposes of the Property Manager. This shall not create any right, expectation, or entitlement with respect to award of a Digital Connectivity Rating.

   (iii) Participation in such optional audit shall not be a prerequisite for applying for a Digital Connectivity Rating and shall not have any bearing on the outcome of a rating assessment undertaken under the Regulations.

(iv) Any indicative score or indicative star level, if mentioned, shall be clearly marked as non-binding and for internal reference only.

3. **Summary of Audit (Including Indicative Positioning, if Mutually Agreed)**

(The report may include:)

(i) Table of criteria and sub-criteria along with indicative scores (if calculated)

(ii) Overall indicative total score and indicative star level (clearly marked as non-binding)

(iii) Potential improvement scenario after implementation of recommended actions

4. **Sub-Criteria-wise Detailed Assessment**

(For each applicable sub-criterion, the following minimum information may be covered. Emphasis may be placed on sub-criteria where gaps are observed.)

For each applicable sub-criterion:

(i) Sub-Criterion Name / Code

(ii) Present Status of Digital Connectivity

(iii) Evidence Provided and/or Verified

(iv) Gap Identified (if any)

(v) Recommended Action for Property Manager and scope of improvement

(vi) Priority or impact level (if indicated)

(vii) Any additional information considered relevant by the DCRA

5. **Declaration by DCRA**

(An appropriate declaration may be included covering, inter alia, the following:)

(i) This Optional Digital Connectivity Audit has been conducted in good faith based on the information, documentation, and access provided by the Property Manager.

(ii) This report shall not be construed as a Digital Connectivity Rating under the Regulations and shall not create any entitlement or expectation with respect to award of a Digital Connectivity Rating.

(iii) This report reflects the status of Digital Connectivity Infrastructure as assessed on [DD/MM/YYYY]. Any improvement or deterioration in digital connectivity infrastructure occurring after this date are not covered in this report and may alter the observations, findings, or indicative positioning contained herein.

6. **Signature along with DCRA Details**
   (i)   Authorized Signatory of DCRA :_____

   (ii)   Name :_____

   (iii) Designation :_____

   (iv)   DCRA Registration ID (as per Rating Platform) :_____

   (v)   Date :_____

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Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20, Ashoka Road, New Delhi - 110001
(Licensing Policy Wing)
****

No. 20-1341/2023-AS-I

Dated: 09.07.2025

Office Memorandum

Subject: Framework for establishing Telecommunication Infrastructure in Building Development

　　　　After considering the TRAI's recommendations dated 20.02.2023 on the "Rating of Buildings or Areas for Digital Connectivity" and the subsequent response dated 22.05.2025 from TRAI, the Government has taken a final decision on the matter.

Introduction:

2.　　With the growing use of telecommunication services in everyday life—such as online education, healthcare, government services, and business—telecommunication connectivity within buildings has become as important as water and electricity. However, many residents continue to face challenges while accessing the telecommunication services within buildings. To address such challenges, a policy and regulatory framework for the establishment of Telecommunication Infrastructure within buildings is outlined here. The policy and regulatory framework outlined here is aligned with the report of Inter-Ministerial Committee for '*Suggesting procedure, norms & methodology for issuance of IBS-NOC by TERM Cell/LSA during Plan approval and completion and preparation of norms for the same*'.

3.　　A series of measures need to be undertaken—such as updating building regulations including the Model Building Bye-Laws (MBBL) and the National Building Code (NBC), certifying Telecommunication Infrastructure (TI) professionals, prescribing relevant standards for TI, and ensuring active collaboration with States and Union Territories—to incorporate TI as a fundamental requirement in building development. There is also need for collaboration between property managers, certified professionals, and telecom service providers to plan, install, and upgrade the telecommunication systems. This approach is expected to improve in-building connectivity, make telecommunication services more accessible, and help bridge the digital divide—ensuring that every citizen has a better and more equal telecommunication experience.

4.　　Accordingly, coordinated efforts are required from various stakeholders, including Ministry of Housing and Urban Affairs (MoHUA), Ministry of Rural Development (MoRD), Bureau of Indian Standards (BIS), Department of Telecommunications (DoT) HQ, Telecommunication Engineering Centre (TEC) Wing of DoT, National Broadband Mission (NBM) Division of DoT and National Communications Academy-Technology (NCA-T) Wing of DoT.

5.　　Prior to outlining the actionable items under the framework, it is important to highlight the key definition of Telecommunication Infrastructure (TI), which is to be uniformly considered by all stakeholders in the context of implementation. All definitions

have been provided in detail in the proposed amendments in the MBBL related to Telecommunication Infrastructure in Buildings, enclosed in Appendix-I, titled *'Proposed Chapter for Inclusion in the MBBL-2016'* under paragraph 4 for ready reference.

5.1   Telecommunication Infrastructure (TI) is divided into three sub-parts:

a) Enabling infrastructure i.e. Entrance Facilities (EF)/ Lead-in conduits, underground conduits/pipes to Fibre Distribution Frame (FDF)/ Main Distribution Frame (MDF) room, Fibre Distribution Frame (FDF)/ Main Distribution Frame (MDF)/ Equipment Room (ER), Telecommunication Room (TR), duct space, feeder cable, wired transmission links (but not wireless), optical fiber, Optical Line Terminals (OLTs), etc., which need to be provisioned during and after construction of the building but before grant of occupancy cum completion certificate, for provisioning of the telecommunication services inside the building. This enabling infrastructure, henceforth, be referred to as <u>Enabling Telecommunication Infrastructure (ETI)</u>.

b) Indoor network for mobile communication i.e. installation of equipment for In-Building Solution (IBS)/ Distributed Antenna System (DAS) including active/passive antennas, cross connects, waveguides, fiber distribution for active IBS, etc., which needs to be provisioned for indoor mobile coverage, henceforth, be referred to as <u>IBS for Indoor Mobile Coverage.</u>

c) Telecommunication Equipment (e.g. Base Stations (Base Transceiver Stations) and its associated equipment) for providing feed to IBS/ DAS, henceforth, be referred to as <u>Telecommunication Equipment (TE).</u>

6.   The letter dated 16.01.2025 issued for implementation of the report of the Inter-Ministerial Committee for *'Suggesting procedure, norms & methodology for issuance of IBS-NOC by TERM Cell/LSA during Plan approval and completion and preparation of norms for the same'* is also enclosed as Annexure-A for reference. The original TRAI's recommendation dated 20.02.2023 and the subsequent response dated 22.05.2025 from TRAI can be accessed through following links:

https://www.trai.gov.in/sites/default/files/2024-09/Recommendation_20022023.pdf
https://www.trai.gov.in/sites/default/files/2025-05/TRAI_Response_22052025.pdf

7.   The summary of actionable items pertaining to each stakeholder is provided below. For detailed information, reference may be made to the proposed amendments to the MBBL (enclosed as Appendix-I) and the NBC (enclosed as Appendix-II) concerning Telecommunication Infrastructure in Buildings, as well as the report of the Inter-Ministerial Committee on IBS-NOC, enclosed as Annexure-A.

7.1 Ministry of Housing and Urban Affairs (MoHUA):

7.1.1   MoHUA may:

a) include a separate chapter in the Model Building Bye-Laws (MBBL) outlining a comprehensive framework for the development of Telecommunication Infrastructure (TI).

b) include Enabling Telecommunication Infrastructure (ETI) as an essential component of building development plans, in line with other core services such as water supply, electrical systems, gas supply, fire protection and fire safety requirements, etc.

c) amend the Model Building Bye-Laws (MBBL) /addendum to MBBL to include suitable provisions enabling the respective State Governments to decide whether the Rating of Buildings for Telecommunication Connectivity may be made mandatory or kept voluntary for different categories of buildings.

d) implement the provisions related to Telecommunication Infrastructure (TI) in the new building bye-laws/addendum to MBBL by leveraging the expertise of existing professionals already engaged in the design and development of buildings and TI, till the time NCA-T establishes mechanism to get TI professionals ready.

e) facilitate the development of a standardised module format for issuing NOCs related to Telecommunication Infrastructure (TI) during the building plan approval stage and upon completion of building construction, in consultation with the Telecommunication Engineering Centre (TEC).

7.1.2   Further, MoHUA may consider the following items, as deemed appropriate:

a) incorporate appropriate provisions in the Model Building Bye-Laws (MBBL) and/or the Addendum to MBBL, 2016 for the Rating of Buildings for Telecommunication Connectivity, similar to the provisions currently available in the MBBL for the rating of green buildings.

b) work with State Governments and Union Territories to incorporate suitable provisions for the development of Telecommunication Infrastructure (TI) in their respective building bye-laws or other relevant laws/regulations, particularly in rural, semi-urban, remote, and hilly areas where the Model Building Bye-Laws (MBBL) may not be directly applicable.

c) incorporate the provisions related to mandatory deployment of Enabling Telecommunication Infrastructure (ETI) within buildings—including its maintenance, timely upgradation, etc. —into the builder-buyer agreement, so as to bring these aspects under the purview of the Real Estate Regulatory Authority (RERA) Act and ensure their enforceability through the Real Estate Regulatory Authority, in alignment with the Act's objective of safeguarding consumer interests and enabling timely dispute resolution.

7.1.3   MoHUA had issued an addendum to the Model Building Bye-Laws (MBBL) 2016, titled as 'Provisions for In-Building Solutions, Digital Communication Infrastructure', in March 2022. Subsequently, MoHUA may carry out amendments in the Model Building Bye-Laws (MBBL) and/or the Addendum to MBBL, 2016, with the objective of incorporating the provisions related to Telecommunication Infrastructure in Buildings, as outlined in the proposed amendments enclosed in Appendix-I, titled *Proposed Chapter for Inclusion in the MBBL-2016*', taking into account the definitions related to TI, as detailed in paragraph 4 of Appendix-I.

7.2 Bureau of Indian Standards (BIS):

7.2.1   BIS may:

a) review the existing standards and procedures related to Telecommunication Infrastructure (TI) for buildings.

b) prescribe different standards for TI for different classes of Buildings.

c) prescribe such provisions of TI that would be mandatorily required (essential requirements) to be completed for issuance of completion/occupancy certificate for Buildings.

d) include members from the Department of Telecommunications and the telecom industry in the "National Building Code Sectional Committee," also referred to as the Guiding Committee, constituted under the NBC.

   [Note: *Director (LPA) is nominated as a member from the Department of Telecommunication in the Guiding Committee*]

e) include representatives from the Telecommunication Engineering Centre (TEC), the Telecommunications Standards Development Society India (TSDSI), experts in telecom RF planning, and experts in digital modelling of buildings in the Panel on 'Information and Communication Enabled Installations' under NBC (Volume II, Part 8, Section 6). The convener of this panel could be a representative nominated by the Department of Telecommunications (DoT).

f) assign the BIS Panel on 'Information and Communication Enabled Installations' the responsibility of developing standards related to TI for buildings, to be included in the National Building Code (NBC), as outlined in Appendix-II to Annexure-A. The definitions related to TI, as provided in paragraph 4 of Appendix-I, be incorporated into the NBC.

7.2.2   BIS may carry out amendments in the National Building Code of India (NBC), with the objective of incorporating the provisions related to Telecommunication Infrastructure in Buildings, as outlined in the proposed amendments enclosed in Appendix-II, titled *'Proposed Modifications in the NBC, 2016'*, taking into account the definitions related to TI, as detailed in paragraph 4 of Appendix-I.

7.3 Telecommunication Engineering Centre (TEC) of DoT:

7.3.1   TEC shall:

a) continue functioning as the equipment standardisation and certification agency for standard products and equipment required for Telecommunication Infrastructure (TI).

b) prescribe necessary specifications in respect of new products required for upgradation of TI.

c) ensure that the certified products for TI are shareable and interoperable.

d) enlist and publish such TI products and equipment which require certification.

7.3.2 The design, implementation and evaluation of TI may be carried out on the basis of these standards.

7.3.3 To nominate a member to act as convener in the Panel on 'Information and Communication Enabled Installations' under NBC (Volume II, Part 8, Section 6).

7.3.4 TEC may prescribe the standards for products and equipment to be used for TI and also TSTP (Test Schedule Test Procedure) to be used for evaluation of TI in the building.

7.4 Ministry of Rural Development (MoRD):

7.4.1 To work with State Governments and Union Territories to incorporate suitable provisions for the development of Telecommunication Infrastructure (TI) in their respective building bye-laws or other relevant laws/regulations, particularly in rural, semi-urban, remote, and hilly areas where the Model Building Bye-Laws (MBBL) may not be directly applicable.

7.5 National Communications Academy-Technology (NCA-T) of DoT:

7.5.1 NCA-T shall:

a) prescribe the qualification, roles and responsibilities of TI Professionals in line with the Government's decision outlined in the report of the Inter-Ministerial Committee for IBS-NOC.

b) study the content of existing similar courses within and outside India and their suitability for TI Professionals in India.

c) suggest appropriate Graduate and Diploma courses including elective/ certification courses at various levels for TI Professionals.

d) finalize the curriculum design along with duration of certification course in consultation with AICTE (All India Council for Technical Education), NCVT (National Council for Vocational Training), TSSC (Telecom Sector Skill Council), ICE (The Institution of Civil Engineers), CoA (Council of Architecture) etc.

e) accredit institutes and organisations for offering courses related to TI. Considering that there are large number of Buildings in each State and UT, there may be a requirement of accreditation of institutions across all States and UTs for offering such courses and development of the workforce.

f) conduct courses, examinations and issue certificates in addition to other institutes as recommended in the report of Inter-Ministerial Committee.

g) organise training for trainers and skill upgradation of TI professionals. Further, engineers having more than 5 years' experience of designing telecommunication networks including RF networks may be recognized as TI professionals. These persons may also become trainer to train eligible professionals.

h) register qualified and certified TI Professionals, on similar lines to the Council of Architecture (CoA). Such Professionals once engaged by Property Managers for development of TI and declared on their plan documents shall be Persons on Record.

i) maintain a register of TI Professionals and publish the same on online portal for access and use by various stakeholders.

j) perform any other work related to capacity building as deemed fit by NCA-T.

k) establish a mechanism for certification, registration and capacity building of TI Professionals including setting up of digital platform for the cohesive implementation of TI.

l) develop and maintain a digital platform for activities related to TI Professionals to facilitate the cohesive implementation of Telecommunication Infrastructure (TI). This platform may also serve to link various agencies, monitor activities related to capacity building, and ensure effective dissemination of information to all stakeholders.

7.5.2 The broad objectives of the digital platform shall include but not limited to the following:

a) Activities related to capacity building of TI Professionals:

    i. Publish details of the courses, accredited institutions and the process for admissions, and applicable fee structures if any.

    ii. Facility for conducting examinations for certification of TI Professionals.

    iii. Registration facility for certified TI Professionals.

b) publish the list of registered TI Professionals and certified products and tools.

c) provide a marketplace for buying and selling of certified products. Such e-marketplace may be linked with Open Network for Digital Commerce (ONDC).

d) enable Property Managers to hire services of registered TI Professionals.

e) enable interaction and collaboration among various stakeholders through various technologies and tools.

f) provide a feedback mechanism for the services delivered by registered TI Professionals and   certified products used.

g) maintain details with regard to development projects/ Buildings approved – ongoing, completed and put to use by the local bodies and other competent authorities.

h) create a repository in respect of the service providers along with technologies and spectrum bands, who are offering services in the area and update the same from time to time.

i) create a repository of knowledge based on past learning of implementation of TI projects to support in standardisation of the processes.

j) make available on a regular basis the information on standards, technology and best practices within India and at global level related to TI.

k) publish analytical reports/articles on TI development and related issues.

l) make available acts/ laws/ bye-laws/ rules/ regulations related to TI.

m) facilitate online application, clearance and approval process for service providers seeking access to TI created in Buildings.

7.5.3   NCA-T will be the nodal organization for all matters related to TI Professionals. NCA-T may consult MoHUA and other institutions like Council of Architecture (CoA), Institution of Civil Engineers (ICE), Telecom Sector Skill Council (TSSC) etc. especially for training, capacity building, certification, evaluation and rating for TI. NCA-T may carry out role of nodal organization for all matters related to TI professional as per the broad responsibilities mentioned above.

7.6 National Broadband Mission (NBM) of DoT:

7.6.1   Every state has their own online/offline arrangements for the building related permissions and issuing NOCs. The format of module for NOC during the building plan approval and on completion of the building construction, may be facilitated by MoHUA in consultation with TEC. This module may be integrated with existing online portal of the concerned State such as Online Building Permission System (OBPS) portal. States not having online portal (such as OBPS) may continue with their existing online/offline mechanism for the same.

7.6.2   The creation and integration of the module with OBPS or any other mechanism as followed by States may be done by States itself in consultation with MoHUA. The follow-up on the same may be taken up by National Broadband Mission (NBM) Division of DoT, through State Broadband Committee (SBC).

8.   In view of the above, all concerned stakeholders are requested to take necessary action on the items outlined, in accordance with their respective roles and responsibilities. The timely implementation of these measures, as proposed, will be instrumental in establishing a robust policy and regulatory framework for the development of Telecommunication Infrastructure (TI) within buildings, thereby enabling seamless telecommunication connectivity and contributing to the broader vision of a digitally empowered society.

9. For the successful implementation of policy and regulatory framework for establishing Telecommunication Infrastructure (TI) in building development, it is essential that all relevant stakeholders (ministries/departments/units) work in close coordination. Accordingly, for the effective implementation of this Inter-Ministerial policy and regulatory framework, its progress may be reviewed by a committee consisting of Director Level representatives from MoHUA, BIS, MoRD, TEC, NCA-T and NBM under the chairmanship of DDG (LP) DoT on a quarterly basis. In this regard, Director (Licensing Policy-Authorisation) DoT is nominated as the convener of this committee. All other stakeholders are requested to kindly share the name and designation of their nominated representatives.

10. For any clarification or queries in respect of this policy and regulatory framework, if any, Director (Licensing Policy-Authorisation) may be contacted at the following email address: dirlpa-dot@gov.in.

Encl.: As above

09.07.25

(Rajat Jain)
ADET (LPA)
Email: adet1.lpa-dot@gov.in

To,

1. Secretary (MoHUA)
2. Secretary (Ministry of Rural Development)
3. Director General (BIS)
4. Director General (NCA-T)
5. Sr. DDG (TEC)
6. DDG (NBM) DoT

Copy to:

1. Member (T) / Member (S) / Member (F) / AS (T) DoT
2. DGT (HQ) DoT / CGCA.
3. Secretary (TRAI).
4. All Directors of LP Wing.
5. Director (IT) may kindly arrange to upload this letter on the website of DoT.

No. 20-545/2017 AS-I (Vol.-II)
Government of India
Ministry of Communications
Department of Telecommunications
Sanchar Bhawan, 20, Ashoka Road, New Delhi - 110001
(Licensing Policy Wing)
****

Dated: 16.01.2025

Subject:- Report of the committee for "Suggesting procedure, norms & methodology for issuance of IBS-NOC by TERM Cell/LSA during Plan approval & completion and preparation of norms for the same" -regarding.

This is regarding the Report of the Committee for "Suggesting procedure, norms & methodology for issuance of IBS-NOC by TERM Cell/LSA during Plan approval & completion and preparation of norms for the same". The committee submitted its report (enclosed).

2. The committee report has been accepted by the Department with following changes:

(i) The word 'Digital' is used in TRAI Recommendations on "Rating of Buildings or Areas for Digital Connectivity" dated 20.02.2023 and TRAI Recommendations on "Introduction of Digital Connectivity Infrastructure Provider (DCIP) Authorization" dated 08.08.2023 to define the Digital Connectivity Infrastructure. However, the word 'Digital' is not defined in the Indian Telegraph Act 1885, and the Telecommunications Act, 2023. Further, the term 'telecommunication' has been defined in the Telecommunication Act, 2023, as published in the Gazette of India. Hence, the word 'Telecommunication' may be used instead of 'Digital', i.e. 'Digital Connectivity Infrastructure (DCI)' may be renamed as 'Telecommunication Infrastructure (TI)' and 'Digital Connectivity Infrastructure Provider (DCIP)' may be renamed as 'Telecommunication Infrastructure Provider (TIP)'.

(ii) The definition of the DCI needs to be reconsidered in the backdrop of the extant legal, licensing and regulatory framework as it discusses about both i.e. active and passive elements. It also needs to be reconsidered in view of the mandatory provisioning of DCI in the buildings and also in view of the TRAI Recommendations on 'Introduction of Digital Connectivity Infrastructure Provider (DCIP) Authorization under Unified License (UL)'.

(iii) The infrastructure items and telecommunication equipment/ systems forming part of the definition of DCI (Digital Connectivity Infrastructure), as recommended by TRAI, henceforth, be referred to as Telecommunication Infrastructure (TI), could be divided into three sub-parts for buildings to be digital ready:

(a) Enabling infrastructure i.e. Entrance Facilities (EF)/Lead-in conduits, underground conduits/pipes to FDF/ MDF room, Fibre Distribution Frame (FDF)/ Main Distribution Frame (MDF) / Equipment Room (ER), Telecommunication Room (TR), duct space, feeder cable, wired transmission links (but not wireless), optical fiber, OLTs, etc., which need to be provisioned during and after construction of the building but before grant of occupancy cum completion certificate, for provisioning of

the telecommunication services inside the building. This enabling infrastructure, henceforth, be referred to as Enabling Telecommunication Infrastructure (ETI).

(Note: As per National Building Code: Part 8 Building Services: Section 6 Information and Communication Enabled Installations, an Equipment Room is centralized space for telecom equipment that usually house equipment of higher complexity than Telecommunication Rooms while a Telecommunications Room houses the telecommunications cabling system equipment. This includes the mechanical terminators and/or cross-connects for floor-serving distribution facility for horizontal cabling and backbone cabling system. There should be at least one TR per floor.)

(b)   Indoor network for mobile communication i.e. installation of equipment for IBS/DAS including active/passive antennas, cross-connects, waveguides, fiber distribution for active IBS, etc., which needs to be provisioned for indoor mobile coverage, henceforth, be referred to as IBS for Indoor Mobile Coverage.

(c)   Telecommunication Equipment (e.g. Base Stations (BTS) along with its other related equipment) for providing feed to IBS/ DAS, henceforth, be referred to as Telecommunication Equipment (TE).

(iv) For making buildings ready for wireline triple play services, provisioning of 'Enabling Telecommunication Infrastructure (ETI)' during and after construction of the building but before grant of occupancy cum completion certificate, may be made mandatory. Further, equipment like CPEs may be installed on user side based on the demand. However, provisioning of 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' may not be mandated as builder/ developer/ Property Manager are not authorized to install 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' as per extant licensing and regulatory framework. 'IBS for Indoor Mobile Coverage' can be installed, maintained and operated by DCIP (proposed) and licensed TSPs while 'Telecommunication Equipment (TE)' can be installed, maintained and operated by licensed TSPs only.

Further, proliferation of 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' may be safeguarded through 'Rating of Buildings or Areas for Digital Connectivity' as suggested by TRAI in its recommendations dated 20.02.2023.

(v) Installation of 'IBS for Indoor Mobile Coverage' may be permitted under proposed DCIP (Digital Connectivity Infrastructure Provider) authorization, if the Government accepts the TRAI Recommendations on 'Introduction of Digital Connectivity Infrastructure Provider (DCIP) Authorization under Unified License (UL)' dated 08.08.2023. The DCIP (Digital Connectivity Infrastructure Provider) will henceforth be called as TIP (Telecommunication Infrastructure Providers).

(vi) Designing of Telecommunication Infrastructure (TI) require deep understanding of Telecommunication and RF (Radio Frequency) engineering. Hence, the functions of TI Designer and TI Evaluator may be performed by professionals having relevant engineering background, deep understanding of Telecommunication and RF Engineering and having completed the certification courses as applicable.

(vii)Certified TI Evaluators will be entitled to examine/inspect the buildings and "approve/ reject/revert" a NOC for Enabling Telecommunication Infrastructure (ETI). However, such

evaluators shall be subject to sample check from LSA offices of DoT for the genuineness of NOC issued. In case any irregularity found in sample check of any TI Evaluator, NTIPRIT {now NCA(T)} will derecognize those TI Evaluators, on the recommendation of LSA offices of DoT.

(viii) NTIPRIT {now NCA(T)}, being the nodal organization in the matters related to TI professionals, may also conduct courses, examinations and issue certificates in addition to other institutes as recommended in the report of the Inter-Ministerial Committee.

3. Further, 10(6)(b) of report of the committee may read as noted below:

b) To establish an external entity with contract/MOU:

The Competent Authority may choose to establish a Body Corporate of DCI Evaluators and enter into a contract with them to examine/inspect the utility/service drawings and completed constructions and recommend to them to either "approve/reject/revert" a NOC as per the prevailing rules. Here too, the LSA office of DoT shall undertake random sampling of NOCs issued and escalate matters of deviation to both of them for appropriate resolution as agreed in the contract/MoU.

4. Committee report along with the changes as mentioned in para 2 and 3 above, is being forwarded for kind information and further necessary action for issues related to their Department/Ministries respectively.

Encl.: As above.

16/01/25
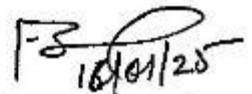
(Manoj Sharma)
DM (LPA)
Email: manoj.sharma71@nic.in

To,

1. Sh. Sudeep Roy, Associate TCP, TCPO, MoHUA
2. Smt. Madhurima Madhav, Scientist D, BIS
3. Director (FA), TEC, DoT
4. Director (IM), NCA(T), DoT
5. Director (LC & R), DGT HQ, DoT

Copy to,

1. Secretary MoHUA.
2. Director General (BIS)
3. Sr DDG & Head, TEC
4. DG NCA(T), DoT
5. DGT HQ DoT

Report of the committee for "Suggesting procedure, norms & methodology for issuance of IBS-NOC by TERM Cell/LSA during Plan approval & completion and preparation of norms for the same"

Background:

As per Para 5 and Para 7(1)(A) of the Addendum to Model Building Bye-Laws, 2016, titled as "Provisions for In-Building Solutions, Digital Communication Infrastructure" and issued by MoHUA in March 2022 (**Annexure-I**), IBS-NOC (In Building Solution- No Objection Certificate) from TERM (Telecom Enforcement Resource and Monitoring) Cell/ LSA (Licensed Service Areas) office of DOT is required during the building plan approval and on completion of the building construction. In this regard, a committee was constituted under chairmanship of DDG(AS) for suggesting procedure, norms, & methodology for issuance of IBS-NOC by TERM Cell/LSA office of DoT. The committee has following officers:

Sh. Sunil Kumar Singhal, DDG(AS), DoT HQ	- Chairperson
Sh. Deepak Pathak, Director (FA), TEC	- Member
Sh. Saurabh Chaturvedi, Director (IM), NTIPRIT	- Member
Sh. Sudeep Roy, Associate TCP, TCPO, MoHUA	- Member
Smt. Madhurima Madhav, Scientist D, BIS	- Member
Sh. Robin Kumar Lakhanpal, Director (LC & R), DGT HQ, DoT	-Member
Sh. Ashok Kumar, Director (AS-I), DoT HQ	-Member Convener

Deliberations:

2. Meetings of the committee were held on 20.02.2023, 25.04.2023, 22.05.2023, 17.07.2023 and 03.08.2023. In these meetings various issues regarding IBS-NOC were discussed in detail.

3. Immediately after 1st meeting of the committee, TRAI has released its Recommendation on "Rating of Buildings or Areas for Digital Connectivity" dated 20.02.2023, which are directly relating to the scope of the committee. Accordingly, the committee decided to consider these TRAI recommendations also, while finalizing its recommendations.

4. TRAI in its recommendations dated 20.02.2023 has expanded the scope of "Provisions for In-Building Solutions, Digital Communication Infrastructure" and introduced the concept of Digital Connectivity Infrastructure. It has defined various terms and the same have been used in this report, as per following details:

Digital Connectivity Infrastructure (DCI): DCI consists of passive and active elements which include any apparatus, appliance, instrument, equipment, and system used or capable of extending seamless digital connectivity. All infrastructure required for establishing Wireless or Wireline Access Networks such as Radio Access Networks (RAN) and Wi-Fi systems, and Transmission Links Interface, Duct Space, Optical Fiber, Poles, Towers, Feeder cable, Antenna, Base Station, In-Building Solutions (IBS), Distributed Antenna System (DAS), or any

other equipment to be used for the provision of digital connectivity, may be part of DCI. However, it shall not include core network elements.

Property Manager: The Property Manager is the person or body who is responsible to oversee and manage the development, operation and maintenance of a Building and has the authority either as owner(s) of the building or as an agent of the owner(s). The term "Property Manager" would include an owner or a developer or a builder of a real estate project(s) or an area(s) responsible to plan, design and build facilities like Multi-storey residential buildings, Commercial buildings or complexes, etc.

DCI Professionals: DCI Professionals include DCI Designer, DCI Engineer and DCI Evaluator.

DCI Designer: A professional who has the competence and possesses prescribed qualifications to design DCI for Buildings.

DCI Engineer: A professional who has the competence and possesses prescribed qualifications to implement the DCI designed for Buildings.

DCI Evaluator: A professional who has the competence and possesses prescribed qualifications to measure and evaluate the quality of the DCI deployed inside Buildings.

4.1 TRAI further recommended that any person who possess the requisite skills, as may be prescribed, could perform the functions as DCI Designer or DCI Engineer or DCI Evaluator.

5. The Committee noted that on the basis of Addendum to Model Building Bye-Laws, 2016, titled as "Provisions for In-Building Solutions, Digital Communication Infrastructure" and issued by MoHUA in March 2022, States have started amending their Building Bye-laws. So, it is necessary to put-in-place the procedure, norms & methodology for issuance of NOC for IBS/enabling infrastructure for digital connectivity i.e. DCI (Digital Connectivity Infrastructure) (defined in para 8 of this report) during the building plan approval and on completion of the building construction.

6. Representatives from MoHUA and BIS briefed the committee members about the context and background of Addendum to Model Building Bye-Laws. The committee referred to following documents:
   i. Addendum to Model Building Bye-Laws, 2016, titled as "Provisions for In-Building Solutions, Digital Communication Infrastructure", and issued by MoHUA in March 2022 (Annexure-I)
   ii. The Model Building Bye-Laws, 2016
   iii. National Building Code 2016:
      a. Part 8, Section 6: Information and Communication Enabled Installations, and
      b. Part 2: Annex A: Guide for the Qualifications and Competence of Professionals
   iv. TRAI Recommendation on "Rating of Buildings or Areas for Digital Connectivity" dated 20.02.2023

7. The Committee deliberated that the process of issuance of the NOC, for the plan of DCI and after installation of DCI, may be such that there is no bottleneck in ongoing approval processes for building construction. The proposed procedure, norms and methodology for issuance of the NOC should facilitate planning and construction of enabling infrastructure for digital connectivity i.e. DCI.

8. Considering the TRAI Recommendations on "Rating of Buildings or Areas for Digital Connectivity" dated 20.02.2023 and extant licensing & regulatory framework for telecom sector, the definition of the DCI, as recommended by TRAI, could be divided into two sub-parts for buildings to be digital ready:

    i. The Digital Communication Infrastructure which needs to be provisioned:
        Part (i)   During the building plan approval and construction, and
        Part (ii)   After completion of the building construction

    ii. For the purpose of mandatory provisions in the buildings at the construction stage, the definition of DCI, as proposed by TRAI in its recommendations dated 20.02.2023, may be limited to the enabling infrastructure for digital connectivity, as described below, henceforth referred to as DCI (Digital Connectivity Infrastructure).

        DCI may be defined as *"Enabling infrastructure like EF (Entrance Facilities) /Lead-in conduits, underground conduits/pipes to MDF room, MDF (Main Distribution Frame)/ ER (Equipment Room), TR (Telecommunication Room), duct space, feeder cable, indoor antennas for IBS (In-Building Solution)/ DAS (Distributed Antenna System) and optical fiber for FTTH (Fibre to the Home) etc.".*

    iii. Another sub-part consisting of Telecommunication Equipment/ Systems like BTS (Base Station), OLTs (Optical Line Terminals), Transmission Links, Wireless Access Points, and ONTs (Optical Network Terminals) etc., which are required for provisioning of telecommunication services to residents/ general public, henceforth referred to as the DCE (Digital Communication Equipment). Installation of the DCE in buildings may not be mandated as it is the choice of the Property Manager i.e., builder/ developer. Further, as per the extant licensing framework for telecom sector, the DCE could be installed, maintained or operated by licensed TSPs only. Proliferation of the DCE may be safeguarded through 'Rating of Buildings or Areas for Digital Connectivity' as suggested by TRAI in its recommendations dated 20.02.2023.

9. Views expressed by the committee members during the meetings are as given below:

    i. NTIPRIT representative suggested an online mechanism for capacity development of DCI Professionals i.e., DCI Designer, DCI Engineer and DCI Evaluator, similar to the process followed by IBBI (Insolvency and Bankruptcy Board of India), for conducting examination and issuing certificates. Suggestions from NTIPRIT representative on qualification of DCI Professionals and course curriculum details as per qualification, are attached as Annexure-II.

ii. NTIPRIT representative informed that, NTIPRIT is already on-boarded to Digi-Locker and various certificates by NTIPRIT are already being issued through Digi-Locker.

iii. MoHUA representative shared a dummy NOC format used by Delhi Fire Services (DFS). Also informed that a checklist is used by DFS to check parameters during the building plan approval based on drawing provisions and another checklist for final inspection based on the provisions made in the finally completed structure against the same parameters that were proposed in the drawings.

iv. MoHUA representative informed that every State/Union Territory has its own online/offline mechanism for the building related permissions and issuing NOCs. Some States have Online Building Permission System (OBPS) for issuance of various type of building permissions. Further, he shared the process flow - from building plan application, to approvals and certification of occupancy as used by Municipal Corporation of Delhi (MCD) for understanding purpose. He suggested that integration module for NOC of DCI could be developed as and when the approval eco-system for the same is established. It will be similar to the modus operandi of other departments who provide NOCs and other permits related to buildings.

v. MoHUA representative informed that classification of buildings is available in Model Building Bye-Laws- 2016, Clause 16 of Definitions. This classification may be used for preparing the specific checklist for issuance of NOC for DCI. However, Building Bye-Laws of different States may have variations in their building types and categories and hence DCI provisions may be taken up by respective States according to their prevailing bye-laws.

vi. TEC representative has suggested the definition of IBS. It is defined as: *"Telecommunication solutions to extend and distribute the cellular signal of mobile operators (such as DAS (Distributed Antenna System)), to facilitate provision of fixed line services using FTTH (Fibre to the Home) and WiFi signal within a building with high quality communication for the indoor environments such as offices, shopping malls, hospitals, airports etc. It covers basic design and integration requirements for telecommunication solutions within building/buildings along with common telecommunication room for various Telecom Service Provider/ Internet Service Provider, cabling infrastructure (fibre or co-axial cable), pathway components, electric power requirement and passive connectivity hardware in the building/buildings".*

vii. TEC representative also prepared checklist for evaluation of proposed DCI for issuance of NOC for DCI during the building plan approval and on completion of the building. A separate check list is also prepared which is to be used for certification after completion of building regarding installation of equipment for digital readiness. Both checklists are attached as Annexure-III and Annexure-IV.

viii. BIS representative informed that if required, it will update the "National Building Code 2016: Part 8, Section 6: Information and Communication Enabled Installations" based on the decision of BIS Concerned Technical Committee. For this purpose, the decision of the Government on TRAI Recommendations on "Rating of Buildings or Areas for Digital Connectivity" dated 20.02.2023 shall be communicated to BIS, by DoT.

ix. BIS representative informed that as per "National Building Code 2016: Part 2 (Administration): Annex A: Guide for the Qualifications and Competence of Professionals", minimum qualification requirement for utility services engineer (which presently includes Mechanical, Electrical and Plumbing Engineer) is graduate engineer. So, it was suggested that the minimum qualification for DCI Designer and DCI Evaluator may be kept as graduate engineer/ graduate architect. The work related to supervision of installation and maintenance of DCI as per the approved design can be performed by a professional, referred to as DCI Engineer. DCI Engineer should have minimum 10+2 as the academic qualification and subsequently trained in installation and maintenance of DCI at ITI/ polytechnic colleges.

x. Director (Licensing Compliance), DGT HQ, DoT, suggested that in place of Telecom Enforcement Resource and Monitoring (TERM) cell of the DoT/LSA office of DoT, which was earlier required to grant NOC as per Addendum to Model Building Bye-Laws, issued by MoHUA in March 2022 and adopted by some of the States, to keep the whole process facilitative, the power to grant NOC could be delegated to DCI Evaluators. To ensure the quality of the NOC issued by DCI Evaluators, assessment of selected samples of the NOC from each district of the State/UT, by LSA office of DoT, may be adopted. Director (Licensing Compliance), DGT HQ, DoT, also suggested a SOP for assessment of sampled NOCs issued by DCI Evaluators, which is attached as **Annexure-V**.

9. The Committee also deliberated on following:

i. For issuing the NOC for DCI during the building plan approval and on completion of a building construction, services of DCI professionals would be necessary. DCI professional is the person who either has requisite qualification and experience or has completed the certification course on DCI. For training and certification of eligible professionals to design, install and evaluate the DCI, the process can be broadly divided into 5 stages.

    a. Designing of curriculum for training of eligible professionals to design, install and evaluate the DCI,

    b. Sufficient availability of qualified trainers including training of trainers who could further train eligible professionals,

    c. Imparting training to eligible professionals through different institutions,

    d. Conducting examinations & certification of professionals after training, and

    e. Registration of the DCI professionals.

ii. The curriculum design along with duration of certification course may be finalized by DoT's training institute NTIPRIT in consultation with AICTE (All India Council for Technical Education), NCVT (National Council for Vocational Training), TSSC (Telecom Sector Skill Council), ICE (The Institution of Civil Engineers), and CoA (Council of Architecture) etc.

iii. Training to the trainers (trainers- who would be providing training to eligible professionals) may be conducted by NTIPRIT. Further, engineers having more than 5 years' experience of designing telecommunication networks including RF (Radio Frequency) networks may be recognized as DCI professionals. These persons may also become trainer to train eligible professionals.

iv. The courses for DCI Designers and DCI Evaluators may be conducted by colleges, institutes which are affiliated to AICTE as the minimum qualification requirement for them is graduation in engineering/ architecture. The courses for DCI Engineers (supervisors), may be conducted by colleges, institutes, ITIs, polytechnics etc. which are affiliated to AICTE/ NCVT/ TSSC as the minimum qualification requirement for them is 10+2/Diploma. AICTE, NCVT and TSSC affiliated institutes may conduct examination and issue certificates as per the process laid down by respective regulators.

v. NTIPRIT of DoT may create a portal for creating database of DCI professionals. For creating such database, crowdsourcing method can be used. This portal may also publish list of institutes providing training for certification of DCI professionals. AICTE/ NCVT/ TSSC affiliated institutes, which would be conducting examination and issuing certificates for DCI Professionals, would upload the list of such DCI professionals on this portal along with the relevant documents including certificates. The access of this portal/database will be open for public.

vi. Sates/Local authorities may use this database and develop a mechanism for registration, regulation, verification and empanelment of such DCI professionals to enable local availability and informed choice of building proponents to engage such professionals as per their requirement.

vii. NTIPRIT may be the nodal organization for all matters related to DCI Professionals.

Recommendations

10. The Committee recommends the following:

    (1)   Considering the TRAI Recommendations on "Rating of Buildings or Areas for Digital Connectivity" dated 20.02.2023 and extant licensing & regulatory framework for telecom sector, the definition of the DCI, as recommended by TRAI, could be divided into two sub-parts for buildings to be digital ready:

        i.   The Digital Communication Infrastructure which needs to be provisioned:

            Part (i)   During the building plan approval and construction, and

            Part (ii)   After completion of the building construction

        ii.   For the purpose of mandatory provisions in the buildings at the construction stage, the definition of DCI, as proposed by TRAI in the recommendations dated 20.02.2023, may be limited to the enabling infrastructure for digital connectivity, as described below, <u>henceforth referred to as DCI (Digital Connectivity Infrastructure)</u>.

            DCI may be defined as *"Enabling infrastructure like EF (Entrance Facilities)/Lead-in conduits, underground conduits/pipes to MDF room, MDF (Main Distribution Frame)/ ER (Equipment Room), TR (Telecommunication Room), duct space, feeder cable, indoor antennas for IBS (In-Building Solution)/ DAS (Distributed Antenna System) and optical fiber for FTTH (Fibre to the Home) etc."*.

        iii.   Another sub-part consisting of Telecommunication Equipment/ Systems like BTS (Base Station), OLTs (Optical Line Terminals), Transmission Links, Wireless Access Points, and ONTs (Optical Network Terminals) etc., which are required for provisioning of telecommunication services to residents/ general public, henceforth referred to as the DCE (Digital Communication Equipment). Installation of the DCE in buildings may not be mandated as it is not in the control of the Property Manager i.e., builder/ developer. Further, as per the extant licensing framework for telecom sector, the DCE could be installed, maintained or operated by licensed TSPs only. Proliferation of the DCE may be safeguarded through 'Rating of Buildings or Areas for Digital Connectivity' as suggested by TRAI in its recommendations dated 20.02.2023.

    (2)   The Committee recommends that in place of Telecom Enforcement Resource and Monitoring (TERM) cell of the DoT/ LSA office of DoT, which was earlier required to grant NOC, as per the Addendum to Model Building Bye-Laws, issued by MoHUA in March 2022 and adopted by some of the States, to keep the whole process facilitative, the power to either grant NOCs/ recommended to either "approve/reject/revert" a NoC for IBS-DCI may be delegated to DCI Evaluators in conformity with the recommendation No. 6. To ensure the quality of the NOC issued by DCI Evaluators, assessment of selected samples of the NOCs from each district of the State/UT, may be done by LSA office of DoT. If there is any observation after sample assessment then the same may be forwarded to concerned State/Local authority for appropriate action. The SOP (as amended)

suggested by DGT Office for assessment of the sampled NOCs, issued by DCI Evaluators, may be adopted (attached as Annexure-VI).

(3) The Committee recommends that the work related to supervision of installation and maintenance of DCI as per the approved design can be performed by a professional, referred to as DCI Engineer. DCI Engineer should have minimum 10+2 as the academic qualification and subsequently trained in installation and maintenance of DCI at ITI/ polytechnic colleges. The functions of DCI Designer and DCI Evaluator may be performed by professionals having minimum qualification as graduate engineer/ graduate architect and having completed the certification courses as applicable.

(4) Every state has their own online/offline arrangements for the building related permissions and issuing NOCs. The format of module for NOC of DCI during the building plan approval and on completion of the building construction, may be facilitated by MoHUA in consultation with TEC. This module may be integrated with existing online portal of the concerned State such as OBPS portal. States not having online portal (such as OBPS) may continue with their existing online/offline mechanism for the same. The module shall consist of overall process—from plan of DCI in the building plan application, to approvals and certification of DCI on sanction of plan application and completion of building structures. Creation and integration of the module with OBPS or any other mechanism as followed by States may be done by States itself in consultation with MoHUA. The follow-up on the same may be taken up by National Broadband Mission (NBM) Division of DoT, through State Broadband Committee (SBC). Committee also recommends that the access of this module shall be available to all relevant stakeholders including already empaneled & registered DCI professionals. Access shall also be available to respective LSA field units and DGT HQ, DoT for information and record purpose. The online portals of respective States (such as OBPS), shall be used for the purpose of issuance of NOC for DCI during the building plan approval and on completion of the building. It should also be linked to portal/website for capacity development courses for DCI Professionals.

(5) The process flow for NOC for DCI during the building plan approval and on completion of the building construction, may be as follows:

 i. Submission of application for sanction of building plan and issuance of NOC, in Common Application Form (CAF) along with building permit fees, drawings and documents. The utility/service plan, drawings and specification documents shall clearly specify the DCI components, IBS installation spaces: area for rooms or systems (e.g., antennas, base stations, remote units, power distribution boxes, etc.).

 ii. Examination of service plan and related documents by DCI Evaluator, within specified time, as per building regulations/ State's Public Services Guarantee Acts/ State's Service Charter, from receipt of application for issuance of NOC for DCI during the building plan approval (with enabled comments, uploads and "approved"/"rejected"/"reverted" options as may be decided according to the provisions in the prevailing bye-laws). The DCI

Evaluator will examine the building plan based on the checklist prepared by TEC for issuance of NOC for DCI during the building plan approval.

iii. On receipt of NOC for DCI, the application is processed by the authority for grant of building permit.

iv. Intimation of completion of the work by the applicant.

v. Submission of application for issuance of Occupancy-cum-Completion Certificate (OCC) and NOC for DCI in Common Occupancy-cum-Completion Certificate Request Form (COCCRF) along with requisite fees, 'as-built' drawings and documents.

vi. Single joint site inspection by all concerned departments (for e.g. Electrical, Fire, Water etc.), including DCI Evaluator who is empowered to issue NoC for DCI on completion of the building. This inspection may be done within specified time, as per building regulations/ State's Public Services Guarantee Acts/ State's Service Charter, from intimation of completion of the work.

vii. Release of Occupancy-cum-Completion Certificate (OCC) along with completion plan.

(6) The Committee recommends that the State Governments may choose to adopt any of the following ways that their suits state legislative framework, towards issuance of IBS-DCI NOCs during plan approval or completion-cum-occupancy stages for such mandated buildings:

a) To 'empower' DCI Evaluators:
This would entail that the Competent Authority for issuing building approvals/ sanction/ permits in the State shall bestow such powers on DCI evaluator(s) to examine/ inspect the utility/service drawings and completed constructions and "approve/reject/revert" a NOC on behalf of them as per the prevailing rules. However, each such evaluator shall be subject to random scrutiny by the LSA office of DoT for the quality of NOCs issued, as stated at recommendation no. (1)

b) To establish an external entity with contract/MOU:
The Competent Authority may choose to establish a Body Corporate, (like PSK or VFS Global) of DCI Evaluators and enter into a contract with them to examine/inspect the utility/service drawings and completed constructions and recommend to them to either "approve/reject/revert" a NOC as per the prevailing rules. Here too, the LSA office of DoT shall undertake random sampling of NOCs issued and escalate matters of deviation to both of them for appropriate resolution as agreed in the contract/MoU.

(7) The checklist* prepared by TEC for evaluation of proposed DCI for issuance of NOC during the building plan approval and on completion of the building. Another checklist prepared by TEC is to be used for certification after completion of building regarding installation of equipment for digital readiness. These checklists, attached as Annexure-III and Annexure-IV, may be adopted. The checklists may also be available on the online portal/OBPS portal so that the property manager may include the various components from the checklist, in their building plan.
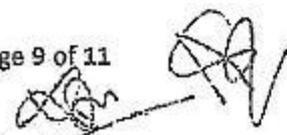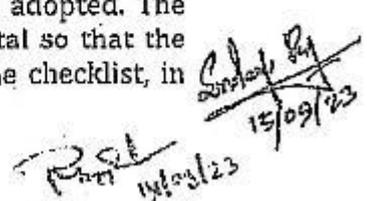
(* The checklist is initial checklist and needs to be further looked upon. This checklist if required may be updated from time to time by TEC in consultation with MoHUA and BIS)

(8)   The curriculum design along with duration of certification course may be finalized by DoT's training institute NTIPRIT in consultation with AICTE (All India Council for Technical Education), NCVT (National Council for Vocational Training), TSSC (Telecom Sector Skill Council), ICE (The Institution of Civil Engineers), CoA (Council of Architecture) etc. Training to the trainers (trainers-who would be providing training to eligible professionals) may be conducted by NTIPRIT. Further, engineers having more than 5 years' experience of designing telecommunication networks including RF networks may be recognized as DCI professionals. These persons may also become trainer to train eligible professionals.

(9)   NTIPRIT of DoT shall develop a portal for creating database of DCI professionals. For creating such database crowdsourcing method or self-registration mechanism can be used. This portal may also publish list of institutes providing training for certification of such professionals. This database will be made available in public domain through links on online portals of the State which are used for issuing building related permissions and NOC or on the portal of the empowered authority. Along with the database, links to the certification courses on DCI may also be made available. CoA and ICE will make suitable provisions in their internal regulations regarding training and certification on DCI.

(10)   Sates/Local authorities may use the database developed by NTIPRIT of DoT and shall develop a mechanism, for registration, verification, empanelment, authorization and regulation of conduct of such DCI professionals, to enable local availability and informed choice of building proponents to engage such professionals as per their requirement.

(11)   NTIPRIT will be the nodal organization for all matters related to DCI Professionals.

(12)   The courses for DCI Designers and DCI Evaluators may be conducted by colleges, institutes etc. which are affiliated to AICTE as the minimum qualification requirement for them is graduation in engineering/ architecture. The courses for DCI Engineers (supervisors) may be conducted by colleges, institutes, ITIs, polytechnics, etc. which are affiliated to AICTE/NCVT/ TSSC as the minimum qualification requirement for them is 10+2/Diploma. Link to the certification courses may be made available on online portals (such as OBPS) of the States which are used for building related permissions and issuing NOC.

(13)   AICTE, NCVT and TSSC affiliated institutes will conduct examination and issue certificates as per the process laid down by respective regulator. These institutes will upload the list of DCI professionals along with certificates and other relevant documents on the portal created by NTIPRIT of DoT. Online mechanism for capacity development courses for DCI Professionals, as proposed by NTIPRIT (as

per Annexure-II), for conducting examination and issuing certificates may also be referred.

(14) Committee recommends that BIS will carry out changes/ updates required in the "National Building Code 2016: Part 8, Section 6: Information and Communication Enabled Installations", based on the decision of BIS Concerned Technical Committee. For this purpose, the decision of the Government on TRAI Recommendations on "Rating of Buildings or Areas for Digital Connectivity" dated 20.02.2023 shall be communicated to BIS, by DoT.
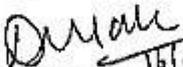
Sh. Deepak Pathak
Director (FA)
TEC
Member

Sh. Saurabh Chaturvedi
Director (IM)
NTIPRIT
Member

Smt. Madhurima Madhav
Scientist D
BIS
Member
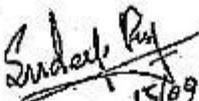
Sh. Sudeep Roy
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TCPO, MoHUA
Member

Sh. Ashok Kumar
Director (AS-I)
DoT HQ
Member Convener
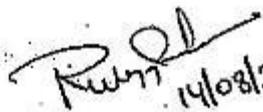
Sh. Robin Kumar Lakhanpal
Director (LC & R)
DGT HQ, DoT
Member

Sh. Sunil Kumar Singhal
DDG (AS)
DoT HQ
Chairperson

Addendum to Model Building Bye-laws, 2016

ADDENDUM TO MODEL BUILDING BYE-LAWS, 2016

PROVISIONS FOR IN-BUILDING SOLUTIONS
Digital Communication Infrastructure

TOWN AND COUNTRY PLANNING ORGANIZATION
MINISTRY OF HOUSING AND URBAN AFFAIRS
GOVERNMENT OF INDIA
March, 2022

CONTENTS

ABBREVIATION

CCTV	Close Circuit Television
CTI	Common Telecommunication Infrastructure
DoT	Department of Telecommunication
FTTX	Fiber to the X Fiber
	Fiber To The Home (FTTH)
	Fiber To The Premises (FTTP)
	Fiber To The Building (FTTB)
	Fiber To The Node (FTTN)
	Fiber To The Curb/Cabinet (FTTC)

GDP	Gross Domestic Product
IBS	In Building Solutions
ISP	Internet Service Provider
MBIT	Megabit
OFC	Optic Fiber Communication
QoS	Quality of Service
RWA	Residential Welfare Association
TRAI	Telecom Regulatory Authority of India
TSP	Telecommunication Service Provider

In-Building Solutions for CTI

1.   Introduction: Communication System

Data growth is exploding globally and in India as per Nokia MBiT 2021 Report, the average monthly *data usage per user in India has increased almost 17 times over the past 5 years*. Covid 19 has further pushed data consumption with people staying indoors. Government has facilitated Work from Home (WFH) guidelines with a Work from Anywhere (within India) permitted. Home consumption of data has therefore grown exponentially through 2020. According to the Tower and Infrastructure Providers Association, almost 85% data traffic and 70% voice traffic is now generated indoors.

The World Bank has clearly demonstrated that every 10% increase in broadband penetration leads to nearly 1.40% increase in GDP growth rate. While that is a global average, even the India specific study by the reputed quasi-Government research agency, ICRIER, has shown that every 10% increase in internet traffic delivers 3.1% increase in GDP per capita and a 10% increase in investment in Telecom Infrastructure will increase GDP by 3.3%. The entire consumer pull today is focused on data and broadband now with the new digital services providing voice services free with the data services. Video and app-based services are driving the demand for broadband with Apps for e-commerce, e-healthcare etc. in everyday use. It is very clear that internet traffic and Apps are contributing to GDP growth and for this to grow even further, conventional connectivity needs to be replaced with duct-sharing and fibre especially, which is an essential requirement In-Building as much as it is for FTTx and Tower Fiberization.

{Note - "Service Provider": an agency that provides any type of telecom / IT services in a building complex, as per scope defined by DOT i.e. TSP / ISP / IP1 etc.}

A broad variety of Information Communication Technology (ICT) systems are expected to be installed in buildings. In order to facilitate proper cabling and installation /up gradation of ICT systems and their cost effectiveness and maintenance, adequate physical infrastructure is required within buildings. This infrastructure will include common ducts, cable riser systems, conduits, cable trays and utility closets etc. among other things. The same can also be retrofitted into existing buildings wherever possible and feasible and must be designed in all new, re-developed and renovated structures. This section describes the general and specific requirements of such an ICT infrastructure in Building specially in respect of cabling aspects.

Communication systems are general utility in much the same way as water, power, gas, cable TV & CCTV/ Security. Unlike traditional communication systems which are constantly evolving, the recommended Digital infrastructure has to be designed to be flexible enough to accommodate a variety of ICT systems and emerging technologies and be future proof for the next 25-30 years. Space and power are required for installation of common ducts, optical fibre, small cells, antennas, smart sensors etc. Space, power and earthing are required for electronic equipment installation for supporting the various digital technologies of now and the future. Most communication utilities can share the same space since the physical topology and wiring requirements are similar and no significant power is present in the cables. However, in some cases state-of-the-art communication cabling or equipment will involve new or more specific requirements for utility spaces such as:

- Cable routing layout and cable length restrictions between Work-Space and utility closet.
- Bending radius and working clearance requirements for different cable types, e.g. Fiberoptic cables, Cat-6 Cables and co-axial cables
- Isolated power circuits for permanent communication equipment,
- Protection, Safety, Grounding and environmental requirements of communication equipment.

2. Emerging Technologies in Telecommunication Services

The technologies used for telecommunications have changed greatly and over the past few years and particularly during the pandemic, India has experienced a massive surge in indoor voice and data consumption. According to the Tower and Infrastructure Providers Association, almost 85% data traffic and 70% voice traffic is now generated indoors. Telecommunication network architecture is changing to meet new requirements for a number of services/ applications viz. 5G, massive Internet of things, Artificial Intelligence, etc.

Choosing efficient and cost-effective and fast-deployment technologies such as wired and wireless networks will improve accessibility. Based on type of building and profile of customers in the buildings, the needs of wired and wireless may vary. Further, the architecture of the information and communication infrastructure is changing to accommodate the requirements of a growing number of ICT-enabled services/applications (broadband, IP, mobile, multimedia, surveillance, IoT, etc.)

In line with the changing market needs, the Digital Service Providers (TSPs)/ ISPs/ IP-1's have been scaling up the deployment of **in-building solutions (IBS) and FTTx, covering active and/ or passive infrastructure.** Further, industry stakeholders are putting greater emphasis on sharing in-building infrastructure to save opex and capex, as well as to avoid the duplication of infrastructure deployment.

Moving forward, the humungous growth of data traffic riding on the use of the digital infrastructure during the pandemic and with the new WFH (Work-from-Home) and work-from-anywhere paradigms and with the emergence of 5G are expected to create huge opportunities for extension of ubiquitous, reliable and high speed digital infrastructure into the homes and inside residential buildings, and lead to huge growth of shared in-Building Solutions sites.

Theoretically, wireless services can be provided from outside the building. However, there are appreciable losses in signal strength when it penetrates building walls. While all wireless services can suffer from poor in-building coverage, this problem is particularly pronounced for the high-speed services. These services require a much better signal quality than their voice counterpart. Therefore, in order to improve in-building coverage and to offer better-quality high-speed data services, there is a definite need to install in-building solutions (IBS) for augmenting the wireless-based voice and data services. This is equally true for installing 5G and Wi-Fi hotspots along with Fibre to x (FTTX) distribution network of Fiber and Cat-6 Cables for seamless data connectivity.

Provisioning of telecom services and broadcasting services *viz.* Cable TV, DTH and Security Services viz. CCTV Cameras and futuristic services *viz.* IoT based sensors would require suitable wire line connectivity inside the buildings inside buildings are not confined to wireless medium only. Wire line services through cables such as copper cables, optical fibre cables (OFC), LAN Cat-6 cables are also equally important for having uninterrupted connectivity. Also, for services such as Cable TV, DTH and Smart Devices Solutions (IoT), suitable cabling within building premises is a pre-requisite and for that, shared duct space across the building riser and floors is critical to achieve the flexibility in the future.

Improved IBS coverage MNOs / Network operators should be allowed to install such appropriate instruments as provided by licensor/ Regulator from time to time.

3.   Policy Efforts

The proliferation of in-building connectivity has become a key component of government policies. The National Digital Communications Policy, 2018 proposes to make the installation of telecom infrastructure and associated cabling and in-building solutions mandatory in all commercial, residential and official buildings (including government buildings) by amending the National Building Code of India with the help of the Bureau of Indian Standards.

The Government has been taking a number of steps for promoting the sharing of in-building infrastructure, in line with TRAI recommendations.

a) In October 2019, the Digital Communications Commission (DCC) approved in-building access and sharing of infrastructure among TSPs, thereby allowing them to share infrastructure and, in the process, curbing TSPs' monopoly to install infrastructure through exclusive contracts with the owners/ builders.

b) In November 2019, the Department of Telecommunications issued an advisory to encourage all TSPs/IP-1s to share their in-building infrastructure such as systems, optical fibre, other cables, ducts and boosters on government premises and other public places such as airports, railway stations, bus terminals and hospitals.

The government's policy and regulatory push coupled with the ever-expanding data usage has propelled TSPs/IP-1s to scale up the deployment of IBS. There is an urgent requirement to allow TSPs/IP-1s to own active built and manage active infrastructure in addition to passive infrastructure to help them cater to the ever-increasing data demand.

Bureau of Indian Standards (BIS) has framed National Building Code of India under which provision of Common Telecom Infrastructure (CTI) housed inside the buildings for convenient provision of telecom services has been envisaged.

Making cities smarter: Ministry of Housing and Urban Affairs led Smart Cities Mission is another key driver that is encouraging the adoption of in-building solutions (IBS) and FTTx/IP networks covering Fiber and LAN cables. Since, the success of the mission relies on the underlying digital communications infrastructure, the cities

identified under this programme have mandated to install common infrastructure inside buildings to enable seamless connectivity. To this end, certain smart cities have started collaborating with infrastructure providers to scale up the deployment of IBS and Fiber network. Moving forward, IBS and FTTx/IP networks covering Fiber and LAN cables should be included as one of the key parameters in the selection of smart cities for granting financial assistance.

4. In- Building and Gated Buildings Solutions

It is important to ensure quality telecom services inside a building – in residential, multi-story building, commercial complex, hotel or airport, police/ Government offices/ buildings etc. It is also essential for Telecommunication Service Providers/ IP-1s to work on sharing of telecom infrastructure which may be made mandatory as they extend the services in the buildings.

Telecom Service Providers/ IP-1s require a non-discriminatory and unhindered access inside the building / along the premises to install the telecom infrastructure or lay their cables.

At present, mobile operators and the building owner or building developer or Resident Welfare Associations (RWA) enter into commercial agreements for in-building deployment. Building owners or building developers delay the negotiations or request exorbitant rents — slowing down the speed of deployment. The Urban Local Body ./Urban Development Authority may intervene in this regard wherein commercial agreements are insisted upon. TSPs/ IP-1s should be given legal rights and permissions to use the Common Telecom Infrastructure (CTI) within the premises of Building / Gated Society free of charge or for a standardized nominal charge just like other essential services like water electricity and/ or gas. Provision of CTI in a building should not be deemed as a revenue source in any way, much as the water and electricity utilities are not. Sufficient space should be provided within the premises to install telecom services by MNOs/ network operators.

The issue is not limited to sharing of IBS/ Distributed Antenna System (DAS) systems only, but TSP should get access to all telecom infrastructures including Fiber Cable and LAN cables for provision of wired and wireless network, other telecom/ ICT and IoT services.

It is important for telecom service providers to provide mobile coverage / network presence/high speed connectivity inside big residential / commercial complexes to improve QoS of their networks. It may not be practical to install individual in-building infrastructure by TSPs/ IP-1s as this will result in not only duplication of network resources but will also entail huge avoidable cost. It may also

be not advisable to lay down cables again and again on the same land / building by several TSPs/IP-1s.

5.   Incorporation in State /UT Building Bye Laws

The buildings are to be constructed in such a way that they *are 'Digital Infrastructure deployment'* / 'Digital Connectivity' ready. There should be provision of telecom ducts / common pathways / runways (digital access paths) to reach to the accessible parts of the buildings. The common ducts /digital access paths to access buildings from outside should invariably be part of the CTI, which could be used by TSPs/ IP-1s for laying/ deploying digital infrastructure including cables. While approving the building plans, it has to be ensured that plan for creation of CTI including the common duct to access the common space used as telecom room inside the building is also prepared and separate set of drawings showing the inter / intra connectivity access to the building with distribution network need to be furnished.

Occupancy-cum-Completion certificate to a building to be granted only after ensuring that the CTI as per the prescribed standards is in place and an undertaking by the Architect or Engineer to be insisted to certify that building has ensured common access to all digital infrastructure to all Service providers in accordance with plan of creation of CTI. Provision of visit from Department of Telecom (DoT) / TRAI officials along-with joint inspection with TSPs - who may suggest any relevant modification in the plan to be ensured.

As part of Building Bye-Laws, the builder/RWA should be mandated to ensure that

1. While preparing the building plans, there is a need to mandate to have properly demarcated sections within buildings and on rooftops for housing BroadBand / digital connectivity infrastructure / antenna. These areas should have access to power supply for reliable, always-on services.
2. Access to building as well as CTI facilities inside the building should be available on a fair, transparent and non- discriminatory manner to all Service Providers/ IP1's.
3. The Service Providers/ IP1's should have unrestricted access for maintenance work.
4. The permission to in-building access and/or CTI facilities inside the building should not be seen as a source of revenue generation for builder(s)/ RWA(s) but as a means for facilitating penetration of

broadband access and thereby helping in socio-economic growth of all the residents.

5. Charges (rentals/ power rates etc.) levied to the TSPs/ IP-1s should be fair, transparent and non-discriminatory and should be on residential rates.

Suitable provision for the creation of Common Telecom Infrastructure (CTI) inside the newly constructed public places like Airports, commercial complexes and residential complexes, be incorporated in State/ UT Building Bye Laws.

6. **At Layout Level**

While developing Greenfield cities/towns, the layout plans should clearly indicate the telecom. as. Utility infrastructure lines. Standards followed for Utility planning shall be published and work shall be done by the respective department for bringing in the standardization of the utility coding and sequences. The placement and sequence of above- and below-ground utilities at the appropriate location in the right-of-way to be ensured for unconstrained movement as well as easy access for maintenance. Telecommunication cables should be placed in a duct that can be accessed at frequent service points with sufficient spare capacity to enable scaling and future expansion, and empty pipes (large size hume pipes / HDPE pipes) should be laid before planting trees in order to accommodate additional infrastructure.

Digital Readiness Rating of Buildings./ Society in line to the GREEN ratings shall be created where the existing and new buildings shall be rated on standardized parameters such as; but not limited to; Digital Infrastructure access, provisions for Emerging Technologies, Maintenance and Operational ease to TSPs / IPv1, Quality of Wireless Services, Quality / Inter-changeability ease of Wireline Services till each Unit Security, redundancy and Expandability of the digital infrastructure etc. A detailed rating parameters and calculation mechanism of Points / Stars shall be devised and benchmarked for all new / retrofitting of buildings/ societies.

Digital Asset repository which will ensure Proper planning and mapping of utilities through GIS is necessary especially when the alignments of telecommunication cables are identified. Design criteria and standards Utilities should meet the following criteria:

- Telecommunication cables should ideally be placed below the parking area or service lane, which may be dug up easily without causing major inconvenience. Where this is not possible, the cables may be placed at the outer edge of the right-of-way.

- There is a need to reduce conflicts with pedestrian movements is to place telecom boxes in easements just off the right-of-way. Where this is not possible, they should be placed within parking or landscaping areas. If cables have to be located in the pedestrian path, a space of at least 2m should be maintained for the through movement of pedestrians. Telecom boxes should never constrain the width of a cycle track.
- In order to minimize disruptions, cables should be installed with proper maintenance infrastructure.

7. **Other procedures for setting up In-Building Solution (IBS)/ Fiber Networks**

(1) There is a need to promote installation of In-Building Solution (IBS) / Smart Connectivity infrastructure, where there is a poor connectivity in terms of weak signal strength inside the office, shopping mall, hospitals, multi-story building, education institutions and the objective has to be to strengthen quality of service of the voice & data of mobile and Fiber broadband network and access to digital services being offered by TSP And IP1's

A) **Procedures of obtaining IBS-NOC during plan approval and completion:**

a) While submitting the proposed Building plan seeking approval from the relevant sanctioning Authority, applicant shall also submit

i. A complete Service Plan for IBS-infrastructure along with required specifications (in consultation with, and certified by a credible Telecom Networking hardware-consultant)

ii. An undertaking that such IBS Infrastructure, when constructed shall be available for sharing by various TSPs/IP-Is.

iii. Such Service Plan (IBS) shall be forwarded by the concerned Local Authority to the Telecom Enforcement Resource and Monitoring (TERM) cell of the State (external NOC agency) – for approval NOC.

iv. During the Joint Site Inspection of the completed building structure the TERM cell shall undertake inspection of the constructed/ installed IBS infrastructure – for issuance of NOC for OCC.

b) The Local Authority shall liaise with the TERM cell as per its relevant online/ offline process of communication to seek the relevant NOCs within the specified time as per the Service Charter/ Service Guarantee

Act and rules in place. Separate communication from the applicant shall be needed to secure the IBS NOC.

B) Provision of IBS components in building premises: (as per NBC 2016)

Entrance Facilities (EF) /Lead-in conduits: (clause 3.1.4, of Part 8: Sec 6) min. 1.2m x 1.83m space to be allocated for each TSP adjacent to the EF.

Underground conduits/pipes to MDF room: min 100mm dia encased conduits.

Main Distribution Frame (MDF)/Equipment Room(ER):
(clause 3.1.2, Part 8: Sec 6)
- prescribed size with L:W ratio between 1:1 to 2:1
- appropriate ventilation of MDF room
- proper Lighting for vision of equipments,
- located at a level above from the Natural Ground level to avoid incidence of flooding

Electric distribution panels, isolaters, sockets and earthing as per specific requirements w.r.t. the area proposed for coverage (DUs/ service subscribers)

Telecommunications Room (TR) at each building block unless provided with MDF room:
(all provisions of space to be as per clause 3.1.3.2, Part 8: Sec 6)
Appropriate nos. of Service/Telecom risers (vertical shafts) for all multi-storeyed buildings w.r.t the area proposed for coverage (DUs/ service subscribers):
- of appropriate nos. and size (width & depth) to accommodate cable trays
- with access door at each floor.

Telecommunications Enclosures (TE) at each floor of a block or TR
(clause 3.1.5, Part 8: Sec 6)
Telecom Media and Connecting Hardware (TE):(clause 3.2, Part 8: Sec6)
Various cabling system and trays: (clause 3.2.4, Part 8: Sec6)
Wireless systems: (clause 3.2.5, Part 8: Sec6)
Backbone Cabling Media Distribution and Bldg. pathways
(clause 3.3, Part 8: Sec6)
Horizontal Cabling Media Distribution and Bldg. pathways
(clause 3.4, Part 8: Sec6)

IBS installation spaces: area for rooms or systems (e.g. antennas, base stations, remote units, power distribution boxes etc.) to be provided as per

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requirements w.r.t. the area proposed for coverage/ no. of proposed users (as per clause 3.1.3.2, Part 8: Sec6, table stated below)

1 Telecom room space norm for buildings with Built-up area >465 sqmt

SI.	Area to be covered by IBS	Size of Telecom Room (all dimension in m)
1	Upto 465 sqmt	3.0 x 2.4
2	465.0 sqmt to 930.0 sqmt	3.0 x 3.4
3	More than 930.0 sqmt	Additional TR required with same space norms

Space requirements for smaller buildings with Built-up area <465 sqmt

SI.	Area to be covered by IBS	Space provisions (all dimensions in m)
1	Upto 93.0 sqmt	Wall cabinets, self-contained enclosed cabinets.
2	93.0.sqmt to 465.0 sqmt	Shallow Room (0.6 x 2.6)
		Walk-in Room (1.3 x 1.3)

IBS installation spaces, so provided, should be:
- not susceptible to flooding
- not exposed to water, moisture, fumes, gases or dust
- able to withstand designed equipment load (to be specified in design)
- located away from any vibrations to avoid dislocation/ dislodgement

For any other necessary detailing of building components and service installations with respect to common Telecom/Digital connectivity Infrastructure, architects/ developers and other service consultants involved in preparing building and service drawings may refer *Part 8 – Section 6: Information and Communication Enabled Installations* of *Volume 2 of the National Building Code, 2016*

(2) Mode of deployment of In-Building, FTTx/IP Solution: There shall be various mode of deployment of In Building solutions such as: The possible modes are deployment by a neutral host infrastructure provider or build and managed by mobile operator and sharing with other service providers on non-discriminatory basis. The In-Build Solutions (IBS), FTTx/IP Solutions can also be deployed by TSPs/ IPs. Moreover, if TSP/ IP1 requires to install optical fiber for connecting In-Building Solution (IBS)/ Distributed Antenna System (DAS) nodes/ FTTx solutions, RoW/ permissions should be granted by the road owning agency through online mode (if same is working seamlessly) or offline mode till online system is established. For deploying indoor solutions these companies should have deemed permissions from the premises

owners for installation of Distribution Network within the utility shafts / common spaces with provisions for common / shared Points of Interconnect for Connectivity to individual units. Moreover, if the TSP/IP requires to install optical fiber for connecting In-Building Solution (IBS)/ Distributed Antenna System (DAS) nodes , FTTx/ IP Solutions for which RoW/ permissions should be granted by the road owning agency through online mode.

(3) Permissibility: The IBS, FTTx/ IP component being small equipment can be installed on any type of land/building/utility pole and shall be exempted from obtaining the permission for installation of these components from the respective Urban Local Body/Urban Development Authority but should get permission from the Administrative Authority of the concerned premises.

(4) Procedure for submitting application for obtaining clearance: TSP/ IP-1 will apply to the administrative authority of the building/ head of the office with layout diagram for implementing IBS in the building as mentioned in the RoW Rules 2016 or State notified RoW Policy

(5) Fees: No fee will be charged for IBS/ FTTx Network. However, charges may be levied for power (as per industry tariffs), fixtures, etc. provided by building owners to TSP/ IP-1s as per actuals.

(6) Access and Distribution Fiber and IP/ LAN networks for connectivity for the Shopping Malls, Multi-Storey Residential Buildings, Cooperative Housing Societies, Residential Welfare Association and Commercial Buildings to be planned and deployed by TSP/ IP-1s as per standard requirement of providing high bandwidth and adequate indoor coverage to each unit/ apartment in these complexes.

References

1. Telecom Regulatory Authority of India (2011): *Recommendations on Telecommunications Infrastructure Policy.*
2. Telecom Regulatory Authority of India (2017): *Recommendations on In-Building Access by Telecom Service Providers.*
3. Uttar Pradesh Expressways Industrial Development Authority (2018): Guidelines for Applicants for ducting & laying of optical fiber.

DCI Professional (DCIP):

A DCI Professional means an eligible person:

    a. enrolled with a DCI Agency (DCIA) as its member and,

    b. registered with DoT as a DCI Professional (DCIP).

* DCI Agency –NTIPRIT {In due course, more may be designated depending on load}

Process to become an DCIP:

Following are the (mandatory) stages to be followed to become a DCIP:

A. Electronics/ Electronics & Communications/ Communications engineering degree or equivalent degree with at least five years of experience in installation/maintenance /operation of telecommunication equipment. OR Electronics/ Electronics & Communications/ Communications diploma holder with at least ten years of experience in installation/maintenance /operation of telecommunication equipment.

Stage-1: Enrol as a professional member with a DCI agency (DCIA)

Stage-2: Complete a 30 hrs **Pre-registration educational course (PREC)** on Section 6: "Information and Communication Enabled Installations" in the buildings as per NBC 2016, conducted by the NTIPRIT.

Stage-3: **Apply to DoT** for registration as an 'DCI Professional' (DCIP)

B. Any other Engineering Degree, apart from A above/ Architecture Degree, with at least five years working experience OR Diploma holders in any other Engineering/Architecture Branch, apart from A above with at least ten years of working experience.

Stage-1: Enrol as a professional member with an DCI agency (DCIA)

Stage-2: Complete and successfully pass a 15 hrs online ICT Fundamentals course, prepared by NTIPRIT.

Stage-3: Complete andsuccessfully pass a 30 hrs online **Pre-registration educational course (PREC)**on Section 6: "Information and Communication Enabled Installations" in the buildings as per NBC 2016conducted by the NTIPRIT.

Stage-4: **Apply to DoT** for registration as an 'DCIProfessional' (DCIP)

DCI Agency (DCIA)

-NTIPRIT is to design, develop and host courses and manage workflow for DCIP through a DCIP portal

- Manpower & other resources shall be provided to DCIA

-DCIA is enrolling and training agency for professional members practising as DCIP.

-DCIA is responsible for capacity building of DCIPs to ensure that the DCIPs remain updated with the technical knowledge and market requirement.

- DCIA shall also conduct online Executive Development Programs/ Capacity Building programs for registered DCIPs

ICT Fundamental Course

- The online module will be developed by NTIPRIT and will be available through LMS

-15 hrs online course; Fee- 5000/+ Tax; Pass certificates to be issued online; prepared & conducted by NTIPRIT.

Pre-Registration Educational Course (PREC)

-The online module will be developed by NTIPRIT and will be available through LMS

-30 hrs online course; Fee- 10000/+ Tax; Pass certificates to be issued online, prepared & conducted by NTIPRIT.

Fee & repository for DCIPs

- Application Fee for registration with DoT– Rs 10,000/- + taxes (5 yrs); Again <u>Rs. 10,000/- every five years for continuance of registration.</u>

- Registration Certificate issued by DoT shall be also sent to Digi Locker. *(NTIPRIT is already on-boarded to Digi Locker and various certificates are already being issued through Digi Locker)*

- Repository of DCIPs along with other information will be available through DCIP portal with following details: Registration No., name of DCIP, Address of DCIP, Email of DCIP, Name of DCIA enrolled with, Date of Registration, Registration valid upto.

DCI Regulator

- DoT shall be the regulator to enlist the DCIPs.
- An individual seeking registration as a DCIP with DoT, **must be enrolled as 'professional member' of a DCIA having successfully completed the applicable courses.**
- All DCIPs enrolled with DCIA and holding appropriate certificate shall be eligible for registration with the Regulator.
- Regulator shall have power to examine the complaints and delist/debar DCIP, if found culpable of misconduct in issuing NOCs.
- All decisions of regulator shall be final and binding.
- Regulator shall have the power to identify/appoint more DCIA as per emerging requirements.

Check List for IBS-NOC-Annexure-III
(During Plan approval and on completion of building)

Application Form

S. No.	Description	Details
1.	Name and Address of the owner	
2.	Plot no. & Location of proposed building	
3.	Category of building use	
4.	Height of the building	
5.	Number of Floors	
6.	Covered area at ground floor	
7.	Typical floor area/area at each floor	
8.	No. of basements (if any)	
9.	Basement floor area, if any	
10.	Area in basements with DCI need	
11.	Total premise area	
12.	Mobile coverage status	
13.	Fibre connectivity status	

Telecommunication Room (TR)

S. No.	Description	Mark (Yes/No)
1.	Provision for TR with sufficient space to serve multiple TSPs and ISPs and sufficiently sized for cabinet, rack and equipment sizes using largest and/or heaviest dimensions and weights so that working clearance requirements, space for future installations, and structural requirements are satisfied.	
2.	TR should not be beneath toilets, showers, laboratories, kitchens, sinks, open courtyards, planters, roof drain leaders, cooling towers, or other areas where water service is provided.	
3.	Piping such as water pipes, steam pipes, medical gas pipes, sanitary waste pipes, roof drains, A/C ducts, and other unrelated piping systems containing liquids or gasses should not be installed in and should not pass through TR including inside adjacent walls.	

4.	TR should not be planned adjacent to electrical rooms, elevator machine rooms, exterior walls, loading docks, mail rooms, nor in proximity to sources of electromagnetic and RF interference, fire and smoke hazards, wet or high humidity locations, and patient care areas.	
5.	TR should be located in common space and accessible through a common area.	
6.	TR should be planned with free of columns inside	
7.	There should be raised platform for ICT equipment for flood prone areas	
8.	Provision for electrical room should not be collocated with TR for electric power supply to lighting and ICT equipment.	

Entrance Facility (EF)/Entrance Manhole

S. No.	Description	Mark (Yes /No)
1.	Provision of entrance facilities (EF)/ entrance manhole should be made for outer access point at which outdoor cabling of the TSPs/ISPs enter the building/premise.	
2.	Provision of Common duct should be planned from EF to TR to cater optical fibre cable(s)/ communication cable(s) for all TSPs and ISPs and this duct should be separated from electric duct	
3.	For Critical facilities like hospitals, airports etc.; provision should be made for standby duct/routes for TSPs/ISPs cable to TR as a protection of the telecommunication services.	

Telecommunication Space (TS)

TS is simply a case or housing space for small telecom equipment, cable terminations, and cross-connect cabling for distribution of telecom services on a floor.

S. No.	Description	Mark (Yes /No)
1	Provision should be made for at-least one or sufficient number of TS at each floor including basement to cover whole area.	
2	TS should have sufficient space to serve all access points for wireline and wireless services for each floor. (say 600/900mm clear on all sides of the mounted equipment)	
3	Telecom spaces in multi-floor buildings should be planned vertically aligned and this should be located in areas that are dedicated to telecom use and accessible from common corridors	

| 4 | Other Piping, duct work, distribution of building power (not used for telecommunication services) shall not be planned or passing through a telecom space. | |

Indoor Ducting, Indoor cabling

S. No.	Description	Mark (Yes /No)
1	Pathways from TR to TS for telecommunication use including duct, cable tray and conduits should be planned and designed considering future expansion of telecommunication services.	
2	Telecom cables duct should be planned separate from power cables ducts.	
3	Pathways from TS to Access point for telecommunication use including duct, cable tray and conduits should be planned and designed in considering future expansion of telecommunication services.	
4	Provision for sufficient number of access points must be ensured for seamless coverage and connectivity (wireline and wireless)	

Check List for IBS-NOC- Annexure-IV

(After completion of building regarding installation of equipment for digital readiness)

Application Form

S. No.	Description	Details
1	Name and Address of the building	
2	Purpose of the building	
3	Height of the building	
4	Number of Floors	
5	Covered area at ground floor	
6	Typical floor area/area at each floor	
7	No. of basement	
8	Basement floor area, if any	
9	Total premise area	
10	Mobile coverage status	
11	Fibre connectivity status	

Telecommunication Room (TR)

S. No.		Mark (Yes /No)
1	Size and height of TR to comply (Annex-III, sr.1 of TR)	
2	Compliance of (Annex-III, sr.2 of TR)	
3	Compliance of (Annex-III, sr.3 of TR)	
4	Compliance of (Annex-III, sr.4 of TR)	
5	Compliance of (Annex-III, sr.5 of TR)	
6	Compliance of (Annex-III, sr.6 of TR)	
7	Compliance of (Annex-III, sr.7 of TR)	
8	Compliance of (Annex-III, sr.8 of TR) and specify the installed capacity of power for light & equipment in TR & TS	
9	Verified the availability of temperature and humidity control devices for proper functioning of ICT equipment in TR	
10	Verify that equipment and cable shields should be properly bonded to the telecom bonding and grounding infrastructure of the space	
11	Verify lightening protection, anti-rodent and anti-termite protection, dust and moisture free environment	
12	Verify that the telecom spaces is equipped with adequate fire	

15/09/23   16/08   16/08/2023   17/08/23   14/08/23

S. No.		Mark (Yes /No)
	detection, smoke detection, alarm, fire suppression systems and fire extinguishers	
13	Verify that All equipment in TR is connected with proper earthing.	
14	Verify that there are sufficient tapping points and sockets of DC and AC power supply	
15	Verify the lock & key arrangement with Theft protection of TR.	
16	Verify that Light switches should be located near the entrance to the telecom space.	
17	Verify that Lighting layout should be coordinated with the planned equipment layout, especially overhead cable trays, to ensure no lighting obstruction and sufficient illumination in the room.	
18	Verify that the electrical power supply and cabling should be made separate for the lighting and ICT equipment.	
19	Verify that Emergency power supply and backup should be available for ICT equipment.	
20	Verify that all Fibre cable(s)/communication cables should be terminated at termination frame (Fibre distribution frame etc.) and each residential/commercial /(user unit) connection should be fibre ready.	
21	Verify that termination frame in TR shall have adequate number of ports and terminations to cater the requirement of all residential/commercial connections as per access points. Specify number of termination ports of termination frame or other frame	
22	Verify that each communication cable terminated at termination frame installed in TR should be marked properly for identification and unambiguity	
23	Verify that Physical Security Systems should be coordinated with door hardware, and Fire Detection and Notification Systems	
24	Verify the devices should be installed for primary and secondary surge protection.	

Entrance Facility (EF)/Entrance Manhole

S.No.		Mark (Yes /No)
1	Compliance of (Annex-III, sr.1 of EF), Specify the dimension of manhole	
2	Compliance of (Annex-III, sr.2 of EF), Specify the dimension of duct	
3	Compliance of (Annex-III, sr.3 of EF), Specify the standby duct and dimension	

Telecommunication Space (TS)

TS is simply a case or housing space for small telecom equipment, cable terminations, and cross-connect cabling for distribution of telecom services on a floor.

S. No.		Mark (Yes /No)
1	Verify that each floor including basement should have at-least one TS. Floor No. of TS Dimension of TS Basement Ground floor First floor	
2	Verify that any cross connects, switches/splitters or any intermediate termination box have been installed to provide telecom services for that area. Floor description details of device Basement Ground floor First floor	
3	Verify that all TS in multi-floor buildings are aligned vertically.	
4	Verify, If the enclosure consists of metallic components, it shall be earthed.	
5	Verify that any cross connects, switches/splitters or any intermediate termination box have been connected with proper cabling. Floor description details of device Basement Ground floor First floor	
6.	Verify that all TS should properly be numbered and matched with termination at ports in TS.	

Access Point (AP)

S. No.		Mark (Yes /No)
1	Specify below Floor No. of Wifi AP/ No. of Mobile Antenna AP/No. of FFTH AP Basement Ground floor First floor	
2	Verify that all Access Points are properly wired.	
3	FTTH: Verify that at each location of FTTH access point electrical power socket should be co-located with fibre access point.	
4	FTTH: Verify that at least two fibre cable should be laid for each FTTH access point.	
5	Wi-fi: Verify that at each location of wi-fi access point electrical power socket should be co-located with fibre access point/communication cable (All balanced twisted-pair, coaxial cable etc.)	
6	Wi-fi: Verify that there should be numbers of Wireless Access Points to cover area/building. In such cases, Wi-Fi access points should have centralized controller at TS. Centralized controller can be hardware or software based and depending upon number of WAPs.	
7	Mobile Coverage: Verify that at each location of antenna access point feeder cable from TR/TS should be laid.	
8	Mobile Coverage: Distributed antenna systems (DAS) are signal distribution systems for strengthening the public mobile wireless signal inside the buildings or installations. Verify that the active equipment should be installed in TR on which cables to/from DAS are connected.	
9	Mobile Coverage: For DAS system, verify that the required cable and passive antenna should be installed in corridors/rooms/offices, normally along the centre line.	
10	Mobile Coverage: To mitigate low signal issues, verify that the Wireless repeater (WR) should be installed at access point to rebroadcast it with amplified signal.	

Indoor Ducting, Indoor cabling

S. No.		Mark (Yes /No)
1	Verify that the Pathways including duct, cable tray and conduits are properly installed considering provision of future expansion of telecommunication services.	
2	Verify that the Telecom cables duct are separated from power cables ducts.	
3	Verify that Separate optical fibre cable(s)/communication cable are laid from TR to TS to cater connectivity of each floor and are terminated to termination box located at TS. In case of any issue of optical power budget, direct optical cables/pigtails are extended from TR.	
4	Verify that Indoor optical fibre(s)/communication cable(s) cabling are laid and connectivity must be through proper ducting/tray between floor termination box and each access point of the floor with proper marking	
5	Verify that Individual cabling should be done from TS to access points on each floor for various telecom services.	
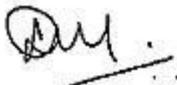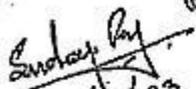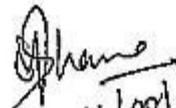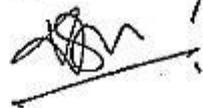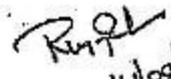
SOP for LSA Auditors

- LSA field unit should have access to online portal through which the clearances/NoC were given.

- DCI Auditor, DCI Nodal officer and Approving Authority will be designated in Rural Vertical of every LSA field office as detailed below :

  - o AD/ADET/ADG   :   DCI Auditor.
  - o ADG/Director   :   DCI Nodal Officer.
  - o DDG   :   Approving Authority.

- **Sampling :**

  - o Sample should be selected from each district of the State/UT where the NOCs was given in the previous month.
  - o Minimum sample size should be 100 for every month.
  - o 25% Samples should be selected from preceding month and remaining 75% from other months
  - o The random sampling will be done by LSA field units.

- The checklist for auditors should be dynamically implemented/designed in the online portal.

- **Time period of Audit :**
  - Sampling to be done by the 5th of every month.
  - Auditing to be completed by 25th of every month.

- **Uploading of Auditor Certificate in the portal :**

  The certificate will be uploaded by auditor in the online portal. A module in online portal may be created for auditing. All the certificates audited in the month are to be uploaded by last day of every month.

- **Fine penalty/ Non-compliance :**

  - In first instance, fine of Rs. 10,000/- will be imposed and termination of registration for 6 months from the audit month.
  - In the second instance, fine of Rs. 20,000/- will be imposed and termination of registration for 1 year from the audit month.
  - In the third instance fine of Rs. 50,000/- will be imposed and termination of registration permanently.

SOP for LSA Auditors (Approved)

- LSA field units may have access to online portal/OBPS Portal through which the clearances/NoCs were given. (only for selecting samples)

- **Sampling :**
    - Sample may be selected from each district of the State/UT where the NOCs were given in the previous month.
    - Minimum sample size should be 100 for every month. (consider a fraction when no. of NOCs issued are <100 in a month)
    - 25% Samples should be selected from preceding month and remaining 75% from other months
    - The random sampling will be done by LSA field units. (to ensure that random sampling from other months doesn't pick the ones already picked while 'sampling during the preceding month')

- The checklist for auditors may be dynamically implemented/designed in the online portal.

- **Time period of Audit:**
    - Sampling to be done by the 5th of every month.
    - Auditing to be completed by 25th of every month.

- **Intimation to concerned State/Local Authority:**

    If there is any observation after sample assessment then the same may be forwarded to concerned State/Local authority for appropriate action.
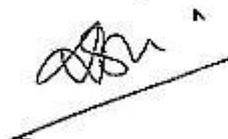
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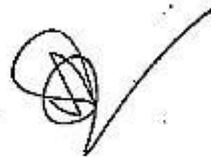
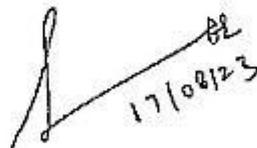**APPENDIX-I**

PROPOSED CHAPTER FOR INCLUSION IN THE

MBBL-2016

Telecommunication Infrastructure (TI) in the Buildings

1. Introduction: Telecommunication Connectivity and Communication Systems

1.1.   The technologies used for telecommunications have changed greatly over the past few years. Telecommunication network architecture is also changing to meet new requirements for a number of new technologies and services/applications viz. 5G, massive Internet of things, Artificial Intelligence, Augmented/Virtual Reality, Metaverse, etc. Information Communication Technology (ICT) systems which were earlier confined to telecommunication services are now converging wherein the thin line differentiating telecommunications and other services is blurring very rapidly. Data growth is exploding globally and in India as per TRAI reports, the average monthly data usage per user in India has increased almost 17 times over the past 7 years. Covid-19 has further pushed data consumption with people staying indoors. Home consumption of data has therefore grown exponentially. According to some estimates, almost 85% data traffic and 70% voice traffic is now generated indoors.

1.2.   Leading global institutes/organizations have released studies that point out direct correlation between penetration of telecommunication connectivity networks/system and socio-economic development. The World Bank has clearly demonstrated that a 10% increase in broadband penetration yielded an additional 1.38% in GDP growth in low and middle-income countries. Even the India specific study by quasi-Government research agency, International Council for Research

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on International Economic Relations (ICRIER), has estimated that a 10% increase in Internet subscribers results in a 3.2% increase in rate of growth of state per capita GDP. It is very clear that applications riding on internet are contributing to GDP growth.

2. Need to place Telecommunication Infrastructure (TI) at par with other utility infrastructure

2.1.   As the digital economy slowly replaces physical economy, the social and economic life of an individual relies more on the telecommunication connectivity and services. The share of digital economy in the overall economy is increasing at a faster pace and hence it is all the more important that, the buildings and associated areas should have robust Telecommunication Infrastructure (TI). The dependence of occupants/users of a building on telecommunication connectivity, to avail essential services like health, education from anywhere, work from anywhere, financial transactions, e-commerce, entertainment etc. places the requirement of TI availability inside building at par with other essential utility infrastructures like water, electricity, fire safety etc. Unavailability of telecommunication connectivity and services results in socio-economic divide. It is therefore essential to ensure access to telecommunication connectivity and services in all buildings and surrounding areas. It is therefore imperative to have a comprehensive framework for the development of Telecommunication Infrastructure (TI) in all types of the buildings and areas (hereinafter referred to as Buildings) for accessing telecommunication services.

2.2.   The Government has been putting in efforts towards developing smart cities. The success of the Smart City mission relies on the underlying telecommunication infrastructure and therefore, it is important for all the cities identified under this programme to have TI inside Buildings to enable seamless connectivity.

2.3. To facilitate the development of TI, its up-gradation and maintenance, adequate arrangements are to be made in advance to ensure TI is developed along with Building development. In case of existing Buildings, suitable frameworks are to be developed to create new TI (if no TI available) or upgrade existing telecom infrastructure to TI, if already available. Realizing the same, Government has made several policy efforts in past few years in this direction.

3. Policy Efforts

3.1. The proliferation of in-building connectivity has become a key component of government policies. The National Digital Communications Policy, 2018 envisages *making requirement for telecom installations and the associated cabling and in-building solutions mandatory in all commercial, residential and office spaces by amending National Building Code of India (NBC), through Bureau of Indian Standards (BIS).*

3.2. The Government has also taken a number of steps for promoting the sharing of in-building infrastructure, in line with TRAI recommendations. Some of the steps taken by the Government are given below:

a) In October 2019, the Digital Communications Commission (DCC) approved in-building access and sharing of infrastructure among TSPs, thereby allowing them to share infrastructure and, in the process, curbing TSPs' monopoly to install infrastructure through exclusive contracts with the owners/builders.

b) In November 2019, the Department of Telecommunications (DoT) issued an advisory to encourage all TSPs to share their in-building

infrastructure with other TSPs such as IBS, optical fibre, other cables, ducts, etc. in all the existing Government/public buildings/places like airports, railway stations, bus terminals, metro stations/lines and hospitals.

c) In November 2016, DoT issued the Indian Telegraph Right of Way Rules to regulate matters related to underground and overground telecommunication infrastructure. These rules have been amended further in 2017, 2021 and 2022.

3.3. Bureau of Indian Standards (BIS) has framed National Building Code of India. Volume 2, Part 8, Section 6 titled '*Information and Communication Enabled Installations*' has provisions related to Common Telecom Infrastructure (CTI), referred to as Enabling Telecommunication Infrastructure (ETI), inside the Buildings for provisions of telecom services. These standards are reviewed from time to time to update the same by incorporating new standards and planning/installations guidelines required for implementation of state-of-the-art ETI. These standards work as reference for the deployment of ETI in the Buildings.

4. Definitions for the purpose of this Annexure

a) **Backhaul:** Backhaul networks connect the access network to the core network.

b) **Buildings or Areas:** For the purpose of development of TI and Rating, 'Buildings or Areas' refer Buildings and their surroundings controlled, owned or managed by a Property Manager. These include residential or commercial complexes, educational or non-educational campuses, offices, housing societies, industrial estates/parks, cantonment areas, ports, airports, railway stations,

bus stations, metro stations, etc. The term 'Buildings or Areas' has been referred hereinafter as 'Buildings' for the sake of convenience.

c) **Telecommunication Infrastructure (TI):** Telecommunication Infrastructure (TI) is divided into three sub-parts:

i. Enabling infrastructure i.e. Entrance Facilities (EF)/ Lead-in conduits, underground conduits/pipes to Fibre Distribution Frame (FDF)/ Main Distribution Frame (MDF) room, Fibre Distribution Frame (FDF)/ Main Distribution Frame (MDF)/ Equipment Room (ER), Telecommunication Room (TR), duct space, feeder cable, wired transmission links (but not wireless), optical fiber, Optical Line Terminals (OLTs), etc., which need to be provisioned during and after construction of the building but before grant of occupancy cum completion certificate, for provisioning of the telecommunication services inside the building. This enabling infrastructure, henceforth, be referred to as Enabling Telecommunication Infrastructure (ETI).

(Note: As per National Building Code: Part 8 Building Services: Section 6 Information and Communication Enabled Installations, an Equipment Room is centralized space for telecom equipment that usually house equipment of higher complexity than Telecommunication Rooms while a Telecommunications Room houses the telecommunications cabling system equipment. This includes the mechanical terminators and/or cross-connects for floor-serving distribution facility for horizontal cabling and backbone cabling system. There should be at least one TR per floor.)

ii. Indoor network for mobile communication i.e. installation of equipment for In-Building Solution (IBS)/ Distributed Antenna System (DAS) including active/passive antennas, cross connects, waveguides, fiber distribution for active IBS, etc., which needs to be provisioned for indoor mobile coverage, henceforth, be referred to as IBS for Indoor Mobile Coverage.

iii. Telecommunication Equipment (e.g. Base Stations (Base Transceiver Stations) and its associated equipment) for providing feed to IBS/ DAS, henceforth, be referred to as Telecommunication Equipment (TE).

d) **TI Designer:** A professional who has the competence and possesses prescribed qualifications to design TI for Buildings.

e) **TI Engineer:** A professional who has the competence and possesses prescribed qualifications to implement the TI designed for Buildings.

f) **TI Evaluator:** A professional who has the competence and possesses prescribed qualifications to measure and evaluate the quality of the TI deployed inside Buildings.

g) **TI Professional:** Means TI Designer or TI Engineer or TI Evaluator.

h) **Digital Platform:** A central platform developed and maintained by NCA-T for cohesive implementation of TI.

i) **TI Professional(s) as Person(s) on Record:** TI Professional(s) engaged by the Property Manager(s) for development of ETI and declared on Plan document shall be Person(s) on Record for TI.

j) **Property Manager:** The person or body who is responsible to oversee and manage the development, operation and maintenance of a Building and has the authority either as owner(s) of the Building or as an agent of the owner(s). The term "Property Manager" would include an owner or a developer or a builder of a real estate project(s) for an area (s) responsible to plan, design and build facilities like Multi-storey residential buildings, commercial buildings or complexes, etc.

k) **Rating Authority:** An authority competent to frame regulations and policies with regard to Rating of Buildings for telecommunication connectivity. In the instant case, it is Telecom Regulatory Authority of India (TRAI).

l) **Rating Agencies:** Agencies empanelled/accredited by Rating Authority for the Rating of Buildings for telecommunication connectivity.

5. Current provisions in building bye-laws, issues involved and need for a new comprehensive approach

5.1. The building bye-laws currently have provisions for creating facilities [cable ducts, chutes, space for Common Telecom Infrastructure (CTI) etc.] to enable service/infrastructure providers to access the same and create infrastructure for various telecommunication services accessible to the users of the Buildings. However, these provisions are few, inadequate and not comprehensively placed in building bye-laws and therefore, require revision.

5.2. Further, the current provisions in building bye-laws do not mandate property owner or manager to ensure existence of pre-provisioned ETI in buildings. Lack of such mandatory provisions for ETI creation in building bye-laws has resulted in several defective models/malpractices. In today's world, where the socio-economic life warrants an individual to remain connected while at home or on move in public places/buildings, a new approach for TI creation in Buildings is required. If common ETI is planned, developed, operated, upgraded (as per consumers' need) and access is allowed to all service providers on non-chargeable basis in fair, transparent and non-discriminatory manner, the consumers will be able to access services of their choices from their preferred service providers. The common ETI will result not only in ensuring availability of telecommunication connectivity and services to Building users but will also avoid duplication of network resources and cost.

5.3.   In case of electricity, water, gas pipes, etc., generally there is only one service provider. However, in case of telecom and broadcasting, the residents/ occupants of a building subscribe to services of multiple operators and therefore there is a requirement to provide access of ETI to all such service providers. It makes sense, that if common ETI is created by the Property Manager and access is allowed to all such service providers in fair, non-chargeable, transparent and non-discriminatory manner, the residents will be able to access quality services from their respective service providers.

5.4.   These bye-laws therefore attempt to improve present arrangement and aim at ensuring that pre-provisioned ETI is available in Buildings to multiple service providers on fair, non-chargeable, transparent and non-discriminatory basis. Some of the broad provisions that govern these bye-laws are-

   a) For making buildings ready for wireline triple play services, provisioning of 'Enabling Telecommunication Infrastructure (ETI)' during and after construction of the building but before grant of occupancy cum completion certificate may be made mandatory. Further, equipment like CPEs may be installed on user side based on the demand.

   b) However, provisioning of 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' may not be mandated as builder/ developer/ Property Manager are not authorized to install 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' as per extant licensing and regulatory framework.

   c) Mandatory provisioning of 'Enabling Telecommunication Infrastructure (ETI)' may facilitate the proliferation of fixed line broadband services and will make the buildings Wi-Fi ready. Voice over Wi-Fi (popularly known as Wi-Fi Calling) will provide superior

indoor telecommunication service availability and better call quality inside the buildings.

d) Property Manager would be the owner of 'Enabling Telecommunication Infrastructure (ETI)'. Property Manager would also be responsible for the operation, maintenance and expansion of 'Enabling Telecommunication Infrastructure (ETI)'.

e) 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' can be installed, maintained and operated by authorised entities/licensees as per the defined scope.

f) The ownership of 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' may lie with authorised entities/licensees under the Telecommunication Act, 2023. However, the responsibility of indoor mobile coverage would lie with the service authorised entities who would be providing telecommunication services inside the buildings.

g) Property Manager is not eligible to install 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)'. Installation of 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' may be done based on the mutual commercial agreement between Property Manager and authorised entities/licensees. Further, the sharing of 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' may be left to mutual agreement between authorised entities/licensees, as the case may be.

h) Further, proliferation of 'IBS for Indoor Mobile Coverage' and 'Telecommunication Equipment (TE)' may be safeguarded through TRAI's recommendation dated 20.02.2023 on 'Rating of Buildings or Areas for Digital Connectivity'

i) Make ETI an essential component of the building development plan with design, implementation, and approval as part of overall building use, on lines of electricity, fire protection and safety.

j) Property managers will get ETI designed through TI professionals and submit the designs to Local authorities as part of overall building plans.

k) The eligible design professionals and their duty to follow certain standards has also been brought out in the bye-laws.

l) As the entire ETI will be pre-provisioned in Building, the cost towards development of ETI should also be accounted in total building plan cost along with other building services. Such cost may be realised by the Property Managers either through upfront loading on cost of constructions or distributing it in two parts one upfront and other through maintenance charges, as applicable for different classes of buildings. The same rules should apply in case of existing buildings also for upgradation, expansion as well as for creation of ETI.

m) The Property Manager should provide access of pre-provisioned ETI owned by him to service providers without any charge. However, in case of active wireless equipment deployed and owned by a licensed entity, a reasonable charge may be worked out by mutual agreement between such licensee and amongst other licensed service providers for sharing of such wireless infrastructure.

n) Occupancy-cum-Completion certificate to a Building is to be granted only after evaluating that the ETI developed is as per the prescribed standards and duly certified by the TI Professional on Record.

o) To ensure that Buildings under development or undergoing redevelopment are constructed with ETI of highest possible standards, the idea of Rating of Buildings for Telecommunication Connectivity has been introduced. This will help to nudge the Property Managers to improve the conditions of telecommunication connectivity in the Buildings under their purview. The rating may cover the aspect of resilience of ETI, future readiness of Buildings for telecommunication connectivity, reachability of the connectivity

at each corner of the Buildings, availability of the service providers and quality of user experience, etc.

p) The Rating Framework for Telecommunication Connectivity will enable the Property Managers to get assessment of their Buildings for telecommunication connectivity by a rating agency. The Buildings so assessed can be assigned rating labels either in terms of number of stars or any other visual representation developed for the same. The rating will be listed on a searchable property directory. Buildings with good telecommunication connectivity Rating will enable tenants and residents to take an informed decision before moving into premises so as to ensure they will have trouble-free connectivity for any kind of activities being performed from that location.

5.5. To incorporate changes as per above discussed approach and to consolidate the provisions related to telecom infrastructure at one place in the Model Building Bye-Laws (MBBL), this annexure has been incorporated. The comprehensive TI framework suggested under this annexure shall facilitate the end users to get TI created as per their requirements and choices through the Property Managers. At the same time, the provisions in the bye-laws will nudge Property Managers to facilitate the service/ infrastructure providers to access the premises and provide best quality of the service to the end users.

6. Important aspects to keep in mind while making TI related provisions in building bye-laws

6.1. Telecommunication and broadcasting services are similar to the other utility services in buildings such as water, power, etc. However, unlike other services, telecommunication services are constantly evolving, and hence, the TI is required to be flexible enough to accommodate a variety

of ICT systems and emerging technologies and be future proof for the next 25-30 years.

6.2. Space and power are required for installation of TI with suitable earthing provisions to safeguard equipment. Most telecommunication utilities can share the same space since the physical topology and wiring requirements are similar and no significant power is present in the cables. However, in some cases state-of-the-art communication cabling or equipment will involve new or more specific requirements for utility spaces such as:

a) Cable routing layout and cable length restrictions between work-space and utility closet.

b) Bending radius and working clearance requirements for different cable types, e.g., Fiber optic cables, Cat-6 Cables and co-axial cables.

c) Isolated power circuits with backup for permanent communication equipment.

d) Protection, Safety, Grounding and environmental requirements of communication equipment.

6.3. While preparing the building plans, it shall be mandatory to have properly demarcated sections within Buildings and on rooftops for housing TI. These areas shall have access to power supply for reliable and always-on services.

6.4. While developing Greenfield cities/towns, the layout plans shall clearly indicate the TI as Utility infrastructure. BIS Standards and NBC provisions should be followed for TI designing and evaluation, wherever applicable.

6.5. The placement and sequence of above-ground and below-ground utilities at the appropriate location in the right-of-way shall be ensured for unconstrained movement as well as easy access for maintenance.

Telecommunication cables shall be placed in a duct that can be accessed at frequent service points with sufficient spare capacity to enable scaling and future expansion, and empty pipes (large size hume pipes / HDPE pipes) shall be laid before planting trees in order to accommodate additional infrastructure.

6.6. TI should be planned in such a manner that it is:
   a) not susceptible to flooding,
   b) not exposed to water, moisture, fumes, gases or dust,
   c) able to withstand designed equipment load (to be specified in design),
   d) located away from any vibrations to avoid dislocation/dislodgement.

6.7. Wireless services are generally provided from the wireless equipment installed outside the Building. However, there are appreciable losses in signal strength when it penetrates building structures/ walls. All these result into poor in-building coverage and are more pronounced to the consumers using high-speed data services. These services require a much better signal quality than their voice counterparts. Therefore, in order to improve in-building coverage and to offer better-quality high-speed data services, there is a definite need to install in-building solutions (IBS) comprising of wireline and wireless equipment. There will also be need for installing small cells of 5G, Wi-Fi hotspots, Fibre to x (FTTX) distribution network of Fiber and Cat-6 Cables for seamless data connectivity.

6.8. Provisioning of telecom services, broadcasting services (like Cable TV, DTH), Security Services (like CCTV Cameras) and futuristic services (like AR/ VR, Metaverse) requiring very high bandwidth and low latency may need robust and always on wireline connectivity along with wireless connectivity. Wireline services through cables such as copper

cables, optical fibre cables (OFC), LAN Cat-6 cables are also equally important for having uninterrupted connectivity.

6.9. While approving the building plans, it has to be ensured that plan for creation of ETI, including the common duct to access telecommunication/ equipment room inside the Building, is also prepared and separate set of drawings showing the inter / intra connectivity access to the Building with distribution network need to be furnished. The common ducts /digital access paths to access Buildings from outside should invariably be part of the ETI which could be used by the service providers for provisioning of various services to consumers.

7. Specific provisions in bye-laws for Development of ETI and Rating of Buildings:

7.1. Qualification and Competence of TI Professionals

The work related to TI engineer i.e, installation and maintenance of ETI as per the approved design can be performed by any person having required skillset - like professionals trained in installation and maintenance of TI at ITI polytechnic colleges. The services of TI Designer would be required during building plan approval, during construction of the building and TI Evaluator on completion of the building.

Designing of Telecommunication Infrastructure (TI) require deep understanding of Telecommunication and RF (Radio Frequency) engineering. Hence, the functions of TI Designer and TI Evaluator may be performed by professionals having relevant engineering background, deep understanding of Telecommunication and RF Engineering and having completed the certification courses as applicable.

Qualifications and competence/ functions of TI Professionals are given in the Annexure-C to Appendix-I [As prescribed by NCA-T].

Any person who possesses the requisite skills, as may be prescribed, can perform the functions as TI Designer or TI Engineer or TI Evaluator.

7.2. **Procedure for design, deployment and evaluation of the ETI**

The procedure for design, deployment and evaluation of ETI shall be as follows:

a) **Pre-construction development permissions**

   i.   **ETI development**: No person or body shall carry out any development of ETI without obtaining prior approval from the Authority for the design plan developed by registered TI Designer(s) excluding the following Buildings:

   1. ...
   2. ...
   } To be decided by MoHUA/ State Govts.

b) The Property Manager shall prepare a ETI plan by engaging TI Designer.

c) To develop ETI, the TI Professionals (Persons on Record for TI) shall follow standards as prescribed by the BIS from time to time.

d) Such ETI plan shall be based on the standards prescribed by BIS and shall be part of the overall building plan submitted to the Authority.

e) **Procedure for obtaining pre-construction development permissions**

i. **Notice for ETI development**: A Property Manager who intends to develop ETI shall give notice in writing to the Authority in the format prescribed by the Authority from time to time. A copy of final plan shall be retained in the office of the Authority for record after the issuance of the permission or rejection, as the case may be.

ii. **Information accompanying notice**: The notice shall be accompanied with the design plan certified by the registered TI Designer (Persons on Record for TI Plan), consisting of information in respect of telecommunication connectivity related requirements of existing/prospective users and building related information in the specified format as notified by the BIS and other documents as prescribed by the Authority.

f) The Authority shall assess the details submitted as per requirements and process defined in National Building Code for pre-construction evaluation of the ETI. The approval may be intimated within the time limit as prescribed by the Authority.

g) The Property Manager shall engage TI Engineer to implement ETI as per the approved design.

h) **Post-construction usage permissions**

i. **Notice of completion**: Property Manager shall submit a notice of completion of the ETI in the format prescribed to the Authority regarding completion of the work described in the ETI development/expansion/upgradation permission, as the case may be.

ii. **Completion and usage permission**: The Authority on receipt of the notice of completion shall evaluate the ETI deployed as per design approved through registered ETI

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Evaluators and communicate the approval or refusal or objection thereto within the time limit as prescribed by the Authority. In case of approval, a completion and usage certificate will be issued by the Authority to the Property Manager.

i) The TI Evaluator shall not be the same professional who has been engaged either as TI Engineer or TI Designer for the given Building.

7.3. **TI Development in the Existing Buildings**

a) In all existing Buildings owned by Government, PSUs or autonomous bodies of the Government, commercial buildings and public places such as airports, ports, railway stations, bus stations, metro stations or any other Building as may be decided by MoHUA in consultation with DoT, TI shall be upgraded or provided to meet the requirements of state-of-the-art telecommunication connectivity. In such cases, it is also recommended that the building bye-laws should prescribe a reasonable time frame so as to ensure availability and accessibility of upgraded TI.

b) For existing Buildings other than mentioned in para (a) above the new building bye-laws should be issued by MoHUA within three years after due consultation with the various stakeholders. Till then, it is recommended that, the Property Managers of such existing Buildings shall implement the new bye-laws voluntary.

7.4. **Ownership and access to the ETI in the Buildings**

a) The Property Manager shall be the owner of the deployed ETI whether created by himself or through his agent and shall be

responsible for maintenance, expansion and upgradation of such ETI. The Property Manager shall allow access of ETI to all service providers in fair, non-chargeable, transparent and non-discriminatory manner and shall not have any exclusive arrangements or agreements with any infrastructure/service provider.

b) The Property Manager shall not have any exclusive arrangements or agreements with any telecom service/ infrastructure provider.

c) The telecom service providers/authorised entities shall have unrestricted access for maintenance work.

7.5. **Standards for Development, Operations and Upgradation of TI: National Building Code of India, 2016 (NBC 2016)**

a) For development, operations and upgradation of TI, the TI professionals, Property Managers and other entities involved shall follow standards prescribed in National Building Code of India, 2016 as amended from time to time.

b) The TI infrastructure shall have following applicable components unless otherwise prescribed for a specific class of buildings, as detailed in the NBC 2016-

S. No.	TI Components	Applicable NBC 2016 clauses	Specifics
1	Entrance Facilities (EF) /Lead-in conduits	clause 3.1.4, of Part 8: Sec 6	min. 1.2m x 1.83m space to be allocated for each TSP adjacent to the EF
2	Underground conduits/ pipes to MDF room		min 100mm dia encased conduits

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3	Main Distribution Frame (MDF)/ Equipment Room (ER)	clause 3.1.2, Part 8: Sec 6	• prescribed size with L:W ratio between 1:1 to 2:1 • appropriate ventilation of MDF room • proper Lighting for vision of equipment, • located at a level above from the Natural Ground level to avoid incidence of flooding • Electric distribution panels, isolators, sockets and earthing as per specific requirements w.r.t the area proposed for coverage (DUs/ service subscribers)
4	Telecommunications Room (TR) at each building block unless provided with MDF room	all provisions of space to be as per clause 3.1.3.2, Part 8: Sec 6	Also refer Note 1 Below
5	Appropriate nos. Of Service/Telecom risers (vertical shafts) for all multi-storeyed buildings w.r.t the area proposed for coverage (DUs/ service subscribers		of appropriate numbers and size (width & depth) to accommodate cable trays with of access door at each floor
6	Telecommunications Enclosures (TE) at each floor of a block or TR	clause 3.1.5, Part 8: Sec 6	
7	Telecom Media and Connecting Hardware (TE)	clause 3.2, Part 8: Sec 6	
8	Various cabling system and trays	clause 3.2.4, Part 8: Sec 6	
9	Wireless systems	clause 3.2.5, Part 8: Sec 6	
10	Backbone Cabling Media Distribution and Bldg. pathways	clause 3.3, Part 8: Sec 6	
11	Horizontal Cabling Media Distribution and Bldg. pathways	clause 3.4, Part 8: Sec6	
12	IBS installation spaces: area for rooms	clause 3.1.3.2, Part 8: Sec6	to be provided as per requirements w.r.t the area

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	or systems (e.g., antennas, base stations, remote units, power distribution boxes, etc.)		proposed for coverage/ no. of proposed users.

Note 1:

A) Telecom room space norm for buildings with Built-up area >465 sqmt

S No	Area to be covered by IBS	Size of Telecom Room (all dimension in m)
1	Upto 465 sqmt	3.0 x 2.4
2	465.0 sqmt to 930.0 sqmt	3.0 x 3.4
3	More than 930.0 sqmt	Additional TR required with same space norms

B) Space requirements for smaller buildings with Built-up area <465 sqmt

S No	Area to be covered by IBS	Size of Telecom Room (all dimension in m)
1	Upto 93.0 sqmt	Wall cabinets, self-contained enclosed cabinets.
2	93.0 sqmt to 465.0 sqmt	Shallow Room (0.6 x 2.6)
		Walk-in Room (1.3 x 1.3)

c) For other standards and installation practices to be followed in development of TI for different classes of Buildings, Volume 2, Section 6 of Part 8, of the National Building Code, 2016 on *'Information and Communication Enabled Installations'*, as updated from time to time, shall be referred and followed by all entities involved including TI professionals, Property Managers, and the Authorities.

7.6. Framework for Rating of Buildings for telecommunication connectivity:

a) Framework for Rating of Buildings for telecommunication shall be as per the regulations of TRAI issued in this regard.

b) MoHUA may decide whether to make the Rating of Buildings for Telecommunication Connectivity mandatory or voluntary for different categories of buildings.

c) MoHUA may decide whether to make Rating of Buildings for telecommunication connectivity mandatory for all existing Central Govt. Buildings of public importance within two years of issue of the policy guidelines by the Government or within one year of obtaining occupancy certificate for all new Central Govt. Buildings or Buildings constructed under Central Govt. funding (full or partial).

d) MoHUA may decide whether to make the Rating of following Central Govt. Buildings of public importance or such Buildings constructed under Central Govt. funding (full or partial) mandatory or voluntary:

    i. Airports,
    ii. Ports,
    iii. Railway/ metro stations,
    iv. Bus stations,
    v. Buildings of Central/ State/ UT Governments/ Local authorities/ Government agencies/ PSUs,
    vi. Government residential colonies,
    vii. Industrial estates including industrial parks, SEZs, multi-modal logistic parks,
    viii. Large commercial office complexes,
    ix. Large commercial shopping complexes,
    x. All institutes of higher education including research institutes,
    xi. All multi-speciality hospitals, and
    xii. Any other Buildings as Government may decide.

e) In respect of buildings of State Govts. or Private developers, the respective State Govt. may decide whether to make rating mandatory or keep it voluntary. The State Govts. may consider making Rating of Buildings for telecommunication connectivity

mandatory for the categories of Buildings as may be suggested by MoHUA.

f) The State Governments may decide whether to make the Rating of Buildings for Telecommunication Connectivity mandatory or voluntary for different categories of buildings. In respect of the categories of buildings notified to be mandatory for rating, the State Governments may decide whether the Property Manager should get Buildings rated for telecommunication connectivity within one year of obtaining the occupancy certificate.

g) However, for buildings other than those mandated, the State Governments may decide whether the Property Manager may get their buildings rated for telecommunication connectivity on voluntary basis or not.

h) The approval of ETI design, deployment and use of Buildings should remain with the existing institutions as per statute of State/UT Governments for the purpose.

Annexure C to Appendix I

Addendum to Appendix E of MBBL 2016
Qualification and Competence of Technical Personnel for
Preparations of Schemes for Building Permit and Supervision

Sl. No	Professional	Qualifications	Competence/ Functions
11	TI Professional		
11(a)	TI Designer	As prescribed by NCA-T in line with the Government's decision and report of Inter-Ministerial Committee for IBS-NOC.	
11(b)	TI Engineer		
11(c)	TI Evaluator		

APPENDIX-II

PROPOSED MODIFICATIONS IN THE NBC, 2016

1. Background

The National Building Code of India (NBC), a comprehensive building code, is a national instrument providing guidelines for regulating the building construction activities across the country. It serves as a Model Code for adoption by all agencies involved in building construction works be they Public Works Departments, other government construction departments, local bodies or private construction agencies.

Volume 2 Part 8 Section 6 of the NBC provides requirements related to Information and Communication Enabled Installations which mainly focus on the essential requirements for ICT-enabled installations, technology systems and related cabling installations in a Building. This section also covers basic design and integration requirements for telecommunication with earmarking of spaces within the Buildings and their cabling infrastructure including their components and passive connectivity hardware. It also mentions that Buildings meant for data centers and those for housing telecom exchange or facilities for offering public services in such Buildings may have to look into various other considerations suited to their requirements. The provisions given in this section are basic requirements applicable to all residential and other Buildings.

The provisions in the NBC are broadly related to the cable laying practices for wireline network infrastructure through common pathways, ducts and cable trays. The solutions regarding TI development proposed through these recommendations comprise of a comprehensive design of infrastructure right from the beginning of construction of the Building and after accounting requirements of end users. It is a collaborative approach

among all stakeholders, which provides telecommunication connectivity solutions as per user specific needs.

The present-day telecom networks majorly consist of wireless networks and more than 98% of the telecom consumers are of the wireless services. Total volume of wireless data usage increased by around 30 times from 2016 to 2021. The recent pandemic has shifted usage pattern from office locations to anywhere i.e., working from home or from any other places as per the consumer's choice. It is therefore essential to review the standards and incorporate new standards to ensure ubiquitous and meaningful connectivity at every location in the Building. Further, standards in respect of 4G and 5G wireless services, high speed bandwidth for fixed line broadband are also to be incorporated so as to provide an immersive experience of telecommunication connectivity to the end users.

2. Recommendations in respect of BIS

The Government has brought out a comprehensive framework for development of Telecommunication Infrastructure inside the Building. This framework includes recommendations for incorporation of TI related provisions in MBBL, role of various stakeholders including Property Managers, recognition and capacity building of TI Professionals and the Rating of Buildings for telecommunication connectivity. The recommendations related to review of provisions in NBC are reproduced below for necessary consideration of BIS through National Building Code Sectional Committee and Panel on *Information and Communication Enabled Installations*:

8. *The Bureau of Indian Standards (BIS) should be tasked to review existing standards and procedures of TI for Buildings. The new terms, related to TI, figured in the recommendations should be defined in the NBC.*

9. The "National Building Code Sectional Committee" constituted under NBC, also referred as Guiding Committee should include members from the Department of Telecommunication and Telecom Industry.

   [Note: Director (LPA) is nominated as a member from the Department of Telecommunication]

10. The Panel on 'Information and Communication Enabled Installations' under NBC (Volume 2, Part 8, Section 6) should be expanded to include representatives from Telecommunication Engineering Centre (TEC) and Telecommunications Standards Development Society India (TSDSI) and, experts on telecom RF planning and experts on digital modelling of Buildings. The convener of this panel should be the representative nominated by DoT.

11. On standards for products and procedures for TI, it is recommended that,

    a) the BIS should prescribe and update standard templates which will be used by Property Managers for collecting building-related information and connectivity requirements of users. In case of non-availability of data from the users, the Property Manager shall use the data available for similar Buildings. Data collected through such templates shall be used by the TI Designers.

    b) the standards and procedures framed, and templates prescribed for TI by BIS should be made part of the National Building Code (NBC).

    c) TEC should continue to work as the equipment standardisation and certification agency for standard products and equipment required for TI.

    d) TEC should prescribe necessary specifications in respect of new products required for upgradation of TI.

    e) TEC should also ensure that the certified products for TI are shareable and interoperable.

    f) TEC should enlist and publish such TI products and equipment which require certification.

12. The BIS should prescribe different standards for different classes of Buildings for TI.

13. Further, BIS should also prescribe such provisions of TI that would be mandatorily required (essential requirements) to be completed for issuance of completion/occupancy certificate for Buildings.

39. The BIS Panel on 'Information and Communication Enabled Installations' should develop standards in respect of TI for the Buildings, to be included in the National Building Code as mentioned in Appendix-II. The definitions, related to TI, as mentioned in para 4 of Appendix-I, should be made part of the NBC.