Our ref: 20260518/05/5B/STG/COPIF

18 May 2026

Director General (Telecoms & Post)
Info-communications Media Development Authority
Attention: Mr Ong Tong San

Dear Mr Ong

PUBLIC CONSULTATION ON THE REVIEW OF THE CODE OF PRACTICE FOR INFO-COMMUNICATION FACILITIES IN BUILDINGS (COPIF)

1. Singapore Telecommunications Pte Ltd and Singtel Mobile Singapore Pte Ltd (collectively **Singtel**) refer to the IMDA's consultation paper dated 18 March 2026 in relation to the above (**Consultation**).

2. Singtel hereby provides our views and comments on the Consultation in the enclosed Annex A.

Yours sincerely

Yeo Tiong Yeow
Vice-President
Regulatory and Interconnect

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Annex A

PUBLIC CONSULTATION ON THE REVIEW OF THE CODE OF PRACTICE FOR INFO-COMMUNICATION FACILITIES IN BUILDINGS (COPIF)

Overview

1. As customer expectations for seamless, always-on connectivity continue to rise, Singtel welcomes the IMDA's efforts that support the timely and efficient deployment of network infrastructure to better meet these needs. Such measures are important in enabling telcos to strengthen network resilience, enhance service quality and support Singapore's growing digital demands.

2. Singtel welcomes the opportunity to provide our comments on the IMDA's proposals below.

Section 1: Future-ready mobile network infrastructure

Provision of Mobile Installation space (MIS) in new developments

Question 1: *i. Any views on the obligations to be imposed on BOs and MNOs to facilitate this process of pre-identifying a suitable location for mobile deployment;*

3. To facilitate the IMDA's proposal of pre-identifying a suitable location for mobile deployment, Singtel submits that it is pertinent for Building Owners (**BO**) and Mobile Network Operators (**MNOs**) to collaborate during the design phase of the development to identify and reserve suitable MIS in new developments. The MNOs would need to furnish standardized technical specifications (e.g., space, loading, power and access requirements) to facilitate feasibility assessments. Similarly, the BO would have to identify and disclose any architectural and/or aesthetic constraints or challenges early in meeting the MNOs' technical requirements. The MIS locations and access route should accommodate safe installation, maintenance, and equipment replacement by the MNOs over the building's lifecycle.

Question 1:

ii. Whether it is useful for MIS to be identified upfront during the development design phase, and if so, an appropriate engagement process between BOs and MNOs, such as leveraging on the Corenet, similar to the process where the Telecommunication Facility Co-ordination Committee engages the developers/BOs; and

4. Singtel supports the upfront identification of MIS during the design phase of new developments. This would help MNOs avoid costly post-construction retrofitting and having to expedite deployment readiness to meet TOP timelines. We also support the use of Corenet as the platform to formalize BO-MNO engagements, aligned with the Telecommunication Facility Co-ordination Committee's existing coordination framework.

5. In addition, Singtel suggests for the IMDA to consider adopting a similar process to the Housing Development Board (**HDB**) PACD projects. The IMDA can consider requiring the BOs/developers to appoint dedicated consultants with structural and architectural expertise to support the co-ordination between stakeholders for the identification of MIS during the development design phase.

6. With the experience from past engagements with BOs/developers where timelines and stakeholder engagement is key, Singtel notes the importance of having clear governance and escalation mechanisms in place to allow for efficient communication between the various stakeholders. Furthermore, with an increase in the number of BOs requesting for the MNOs to deploy mobile equipment at their developments prior to obtaining the Temporary Occupation Permit (**TOP**), it is even more pertinent for a proper communication channel to be set up to ensure smooth communication between the stakeholders. To do so, the following information would be critical:

   a) The appropriate parties for the MNOs to engage with during the project discussions;
   b) The stage which the MNOs' involvement should commence;
   c) In the event of co-site scenarios, who will act as the co-ordinating authority to take on decision-making responsibilities; and
   d) In the event of any disagreements, who will act as the facilitator/co-ordinator of these engagements.

Question 1:

iii. The appropriate period/timeframe for MNOs to be granted access to carry out their installations without disrupting the TOP schedule (e.g., X months prior to TOP Date).

7. A minimum lead time of six (6) to nine (9) months prior to the TOP date is recommended. This would be contingent on the readiness of the development (especially rooftop) and the completion of M&E services. This period is required for site survey, site preparation, equipment installation, testing, and commissioning to ensure safe access and survey/installation by MNOs' personnel such that mobile services are operational at occupancy without impact to the TOP schedule.

Provision of telecom infrastructure in basement carparks in new buildings

Question 2:

i. Whether it is sufficient for BOs to provision telecommunication risers, and cable trays alongside electrical cable trays in the B1 carpark, and if there are other types of ancillary infrastructure required to be provisioned upfront to facilitate MNOs' B1 carpark deployments; and

8. For Basement 1 (**B1**) carparks, the BOs should provision cable trays of a minimum of 300mm width throughout the development ceiling to support efficient installation.

9. Aside from the infrastructure required to facilitate the MNOs' B1 carpark deployments, Singtel also wishes to highlight the need for the IMDA and/or other government agencies to ensure compliance (through the provision of evidence or an acceptance checklist) of the BO regarding the installation of the required infrastructure at the basement carparks. Should there be any disputes between the MNOs and the BO pertaining to the availability of infrastructure for the MNOs to deploy our equipment, we request that the IMDA serve as the co-ordinating party to resolve such disputes.

10. Lastly, with the increase in the number of public housing developments having B1 or lower carparks, Singtel submits that all HDB buildings should also be subject to the requirements under COPIF to provision the necessary equipment in the basement carparks.

Question 2:

ii. Whether it is beneficial for telecommunication risers and telecommunication cable trays to be extended below B1 for future provisioning?

11. Singtel is supportive of the IMDA's proposal to require BOs to extend telecom risers and install cable trays alongside electrical cable trays to below B1 carparks for future provisioning. This would reduce the amount of post-TOP retrofits and disruptions caused should deployment for B2 carparks and below be requested by the BO to the MNOs, subject to commercial negotiations.

Enable street-level mobile connectivity using street lampposts

Question 3:

i. The corresponding land take (i.e., space) required for each street lamppost deployment; and

12. Singtel is supportive of the IMDA's proposal to extend the MIS framework in the COPIF to street lampposts as it would enable deployment in areas where suitable buildings or structures are unavailable. This is also aligned with the COPIF's intent of providing rental-free space for the MNOs to provide quality mobile coverage to Singapore nationwide.

13. The land take required (per MNO) for each street lamppost deployment is as such:

a) Remote Radio Unit (RRU) under Lamppost: 1.5 m^2 per lamppost[1]
b) RRU for 3 sectors: 3 x 1.5 m^2 = 4.5 m^2
c) Equipment area including working space: 5 m x 2 m = 10 m^2[2]

Total Space required: 4.5 m^2 + 10 m^2 = 14.5 m^2

Question 3:

ii. Feasible solution(s) to address safety and aesthetic concerns for such lamppost deployments.

[1] Refer to Diagram 1 under Annex B
[2] Refer to Diagram 2 under Annex B

14. All lamppost-mounted antennas will be certified and endorsed by a Professional Engineer (**PE**) prior to installation. As such, due to structural loading constraints, camouflage deployments on lampposts are generally not feasible.

15. Additionally, having an overly prescriptive aesthetic requirement may (i) require more land take to accommodate the camouflage structure, (ii) compromise the intended coverage goals and (iii) pose a safety hazard to the public and the personnel maintaining the antennas. Singtel requests that the IMDA prioritize functionality and safety over aesthetic considerations.

Enhance clarity on requirements under COPIF to facilitate faster mobile deployments into buildings

Question 4: *i. A reasonable lead time for a notice to be served by the BO to an MNO prior to any proposed temporary or permanent relocation;* *ii. The information to be provided by a BO in order for MNOs to assess and facilitate any proposed temporary or permanent relocation; and* *iii. The cost responsibility between a BO and an MNO for such temporary or permanent relocation.*

16. Based on Singtel's experience, there have been instances whereby the MNOs are forced to evict the development without being provided an alternative site within the development to relocate to. Where there are alternative sites provided, these sites are often not able to provide the same level of coverage as the original location, thus not fulfilling the MNOs' intended coverage. However, the BOs, residents and the IMDA still expect the MNOs to be able to provide the same level of coverage quality. This usually leaves the MNOs in a very challenging position. In order to ensure that each request of relocation is a genuine one, Singtel is of the view that the IMDA should retain the existing COPIF arrangement whereby the BOs will have to bear the full costs of relocation within the same development. This approach serves to ensure that BOs are definite on their need to relocate the MNOs' equipment and will incentivise the BOs to carry out a cost-benefit analysis before deciding whether to relocate the MNOs' equipment. Additionally, this would minimise disruptions to the MNOs' abilities to provide quality mobile services to our customers as optimal MIS locations are retained.

17. However, should the IMDA decide to proceed with this amendment, Singtel requests that a minimum period of six (6) months is provided by the BO to the MNOs for any relocation requirement. This timeline should only start after negotiations (to remain

onsite) between the MNOs and the BO have completed and the relocation site has been confirmed (i.e., the alternative site has been determined). This lead time will allow MNOs to obtain regulatory and internal approvals, prepare the new site (including civil works, power and transmission provisioning), and complete the relocation with minimal service disruption.

18. With regard to the information to be provided by a BO for the MNOs to assess and facilitate any proposed temporary or permanent relocation, Singtel agrees with the IMDA that the BO must provide all relevant information regarding its plan (e.g., proposals, building drawing plans etc) to the MNOs to study and plan for the relocation to another suitable MIS location within the development. Additionally, the BOs' plans must be legitimate and formalised/documented. This could come in the form of the BOs' finalised plans and/or their engagement with their vendors (with a cost incurred on the BOs' end). Should the proposed alternative MIS location be technically unfeasible; it cannot be mandatory for the MNOs to accept the BOs' relocation requests.

Resources incurred by BOs for MNOs' access into buildings

Question 5: *i. Should BO be allowed to recover such access charges from MNOs for each instance of rooftop access requested by an MNO;* *ii. Should the access charges be different for buildings with and without security guards on site; and*

19. Singtel disagrees with the IMDA's proposal to allow BOs to recover access charges from MNOs for each instance of rooftop access requested. We instead request for the IMDA to retain the current approach for access charges where access-related costs are only recoverable for emergency works, after-office hours, or unmanned premises (i.e., no charges for manned developments).

20. Singtel submits that one of the intentions of the COPIF has always been to facilitate the efficient deployment of robust and resilient mobile telecommunications network and services in Singapore. This is only possible with the joint effort of the MNOs (to provide the infrastructure and networks) and BOs (to provide rent-free space and access to the equipment) in playing their respective parts. Should BOs be allowed to charge the MNOs access fees (even when the development is manned), this would result in the MNOs having to take on a greater portion of the responsibility and would take away resources from the MNOs that could be used to better the quality of mobile services in Singapore.

21. We also wish to highlight that we have not observed instances where the BOs have allocated resources to escort Singtel personnel as claimed by the BOs. Additionally, Singtel is of the view that strict compliance to the Workplace Safety and Health (**WSH**) is sufficient to ensure the safety of personnel working on rooftops. As long as the MNOs and the BOs both comply with the requirements, there would not be a justification for the inclusion of such charges on the preface of ensuring safety for workers.

Question 5: *iii. Should access charges be determined and set by IMDA? What would the appropriate benchmark for IMDA to adopt?*

22. Notwithstanding the above, should the IMDA decide to proceed with implementing access charges for each instance of rooftop access, Singtel submits that these charges should be reasonable and commensurate with actual administrative effort. As such, to ensure consistency and reduce the chances of disputes, these charges should be determined and regulated by the IMDA.

23. Singtel highlights that to determine the access charges to be implemented, the IMDA will need to recognise that most buildings have standard access control arrangements in place and any charges incurred by the BO in maintaining their own Standard Operating Procedures (**SOP**) should not be passed onto the MNOs. Additionally, any benchmarking approach should consider the differing security and resiliency requirements for each development (e.g., commercial, residential, industrial, leisure, telecom exchanges, and central offices).

Sample agreement template

Question 6: *i. Whether it is useful for IMDA provide a sample agreement and if so, what terms and conditions should be included in the agreement?*

24. Singtel is supportive of the IMDA's proposal to provide a sample MIS agreement template. This can help to reduce transaction costs and negotiation duration, accelerate mobile deployment within buildings, and provide useful guidance for BOs with limited resources for contract negotiations.

25. To maximise its effectiveness, the template should focus on key provisions such as:

a) The scope of installation works;
b) Access arrangements (e.g., access hours and reinstatement obligations);
c) Clear methodology for determining access or licence fees and associate payment terms;
d) Relocation responsibilities;
e) Responsibilities for maintenance and repairing of installed infrastructure; and
f) Dispute resolution framework (including escalation procedures and the IMDA's role where applicable.

For the avoidance of doubt, the above key provisions are not exhaustive.

26. Notwithstanding the above, Singtel submits that the template should remain as a reference, and nothing should stop parties to revise and amend the template in order to cater to varying corporate governance requirements and site-specific conditions, and preserve the flexibility for parties to negotiate terms that best meet their respective operational and commercial needs.

Change of BO and expiry of MIS Agreement

Question 7: *i. Whether there will be impact or prejudice to the (existing or new) BOs and MNOs in the two scenarios described above; and* *ii. Whether there is a need for an expiry date for the MIS Agreement?*

27. Singtel is supportive of the IMDA's proposed changes to ensure continuity of designated MIS in the event of a change in BO or upon the expiry or termination of an MIS agreement.

28. Given the ongoing obligation under the COPIF for BOs to provide MIS and the need to ensure long-term service continuity, Singtel submits that MIS agreements should not be subject to a fixed expiry. A perpetual arrangement would provide greater certainty and stability to both the BOs and MNOs, reduce administrative burdens associated with renewals, and help ensure that mobile infrastructure within buildings remain continuously available for end users.

Endorsement by a structural PE

Question 8: *i. The proposal for a PE to be engaged for such mobile deployments.*

29. Singtel wishes to clarify that we already do engage a structural PE for our mobile works, including new deployments, enhancements, and additional installations. The PE will review and endorse the proposed works to confirm that the installation is structurally safe prior to commencement of the works. We provide the PE endorsement to the BOs for reference as well.

30. Should there be a case where the development does not comply with the Building and Construction Authority's (**BCA**) structural standards, any additional structural assessment should be undertaken by the BO's PE.

Section 2: Future-proof fixed line infrastructure

Upgrade of in-building cabling to support fixed-line broadband speed beyond 10Gbps

Question 9: *i. The appropriate cabling standard that has the capability to support broadband speed of 10Gbps and beyond and the reasons for the choice of the proposed cabling standard*

31. Singtel submits that it would not be sufficient to utilise Cat7 and/or Cat8 cables for the future-proofing of in-building cabling to support broadband speeds beyond 10Gbps as Cat7 and Cat8 cables can only support up to 10Gbps over 100 metres and 40Gbps over 30 metres respectively. Due to the shorter distance, the cables cannot be used to extend connectivity from the Optical Network Terminal (**ONT**) to all rooms in a large residential unit.

32. Instead, Singtel recommends considering using fibre optics to wire up all the rooms in a residential development. This will be a more cost-effective and future-proofing method and will allow consumers to be able to enjoy the full speed of their broadband as the speed capacity can go up to 400Gbps.

Reduced telecommunication Space and Facilities to allow optimisation of space in single-user buildings

Question 10:

i. The proposal to remove and/or reduce the telecommunication Space and Facilities for small single-user non-residential development as described above;

ii. Any feedback on the current required telecommunication Space and Facilities, such as the MDF room sizes, for the different types of developments?

33. Singtel is not supportive of the IMDA's proposal to remove and/or reduce the telecommunication Space and Facilities for small single-user non-residential development nor the proposal to reduce the number of Lead-in Pipes (**LIPs**) and underground pipes from six (6) to four (4). Singtel requests for the IMDA to retain the current requirements as is.

34. As non-residential developments may be repurposed over time, and single-user developments may evolve into multi-tenanted spaces, Singtel submits that telecommunication Space and Facilities should continue to be set aside in these developments. However, should the owner be able to provide sufficient justification for such a waiver, an undertaking should be provided by the BO (or subsequent BOs) to reinstate the requirements when needed.

35. Similarly, should these single-user developments evolve into multi-tenanted spaces, the current provision of six (6) LIPs is optimal as it allows for up to three (3) service providers with both primary and backup/maintenance pipe.

Minimise public disruption with advance laying of LIPs

Question 11:

i. The approach for construction and interim ownership of LIPs, and the transfer arrangements of the LIPs from Licensee(s) to developer or BO once the latter has been identified.

36. Singtel notes the IMDA's proposal for the construction and interim ownership of LIPs by an appointed Licensee for developments that are selected by relevant government agencies for the construction of advance LIP.

37. Singtel is not supportive of the above proposal as it is not cost-effective. As the development plans and the developer for the site will not be finalised prior to the installation of the LIPs, this could result in additional costs (i.e., reworks, relocation, or

redundancy) being incurred and potential handover issues after the development plans for the site is finalised as the pre-installed LIPs may not align with the eventual building orientation, layout, or technical requirements.

38. In addition, the appointed Licensee would be required to maintain the LIPs prior to handover to the future developer or BO who will use the LIPs to connect/extend telecommunication cables into the development. Singtel submits that the timeline of handover is too uncertain, and this could result in prolonged maintenance obligations by the appointed Licensee. Furthermore, this approach requires the appointed Licensee to provide upfront capital investments, with cost recovery dependent on future developments. With great uncertainty on the handover timeline, there is little to no benefit for the appointed Licensee to justify this upfront spend.

39. Should the IMDA decide to proceed with such an approach, Singtel requests that the IMDA clearly state the obligations of the appointed Licensee and the cost recovery methods that the Licensee will be entitled to (e.g., BOs will have to pay for all maintenance fees accrued over the years etc). This approach should ensure that the appointed Licensee is not worse off because of the new requirement.

Enhance resilience and diversity of buildings providing critical services

Question 12: *i. The proposal for the same Telecommunication Space and Facilities obligations imposed on buildings providing vital services to be extended to those buildings designated as SD/SI.*

40. Singtel is in principle supportive of the IMDA's proposal to impose redundancy and diversity requirements onto buildings designated as Special Development (**SD**) and Special Infrastructure (**SI**). However, Singtel notes that there is no clarity as to the types of buildings that would be classified as such[3]. As such, we request for the IMDA to provide further information on the following:

a) Clear definition and criteria as to what constitutes as an SD or SI;
b) Examples of building types that fall under each classification;
c) Guidance on the coverage requirements for each classification (e.g., solely indoor or inclusive of outdoor coverage);

[3] Singtel notes that under the Infrastructure Protection Act (**IPA**), developments are deemed as a SD and SI if the Minister designates the development as one. However, this does not provide much details.

d) Guidance on whether springboarding from outdoor infrastructure would be permitted from these developments; and
e) Further information on what constitutes as 'vital services' under the framework.

Clarification on the above would ensure consistent interpretation across all the stakeholders, enable the licensees to better plan our deployment strategies, assess cost implications, and address design integration requirements upfront.

41. Notwithstanding the above, Singtel submits that as per the current practice under COPIF, the MNOs' entry into the SD/SI developments should remain subject to the individual MNO's deployment strategy. Should an MNO decide to deploy equipment at the SD/SI developments, aside from the COPIF requirements, the associated costs (e.g., equipment, utilities etc) should be borne by the respective BOs.

Others

Question 13: i. *Other potential changes to enable our telecommunications infrastructure to be future-ready to support Singapore's digital economy*

Application of COPIF

42. Singtel notes that the COPIF currently applies only to developments above certain sizes. We request for the IMDA to assess the relevance of the current eligibility criteria and to study whether there is a need to expand the types of buildings that are required to comply with COPIF. This assessment should be done against Singapore's built environment (e.g., the most common types of buildings etc) and should take into consideration futureproofing Singapore's mobile connectivity services.

43. For example, Singtel suggests extending the requirement to provide MIS under COPIF to developments below 2,000 sqm and/or residential developments with fewer than 80 units. As many low-rise and landed areas have limited opportunities for mobile deployment, extending the requirement criteria for the types of buildings to include developments within these areas (especially in areas with such clustering of developments with lack of suitable sites for mobile deployment) would allow the MNOs to provide more comprehensive nationwide connectivity.

Provision of additional space for active equipment

44. With the number of 5G users in Singapore increasing and the expectations of users rising, there is a growing need to ensure seamless mobile connectivity across the island. In order to match this demand and to continue providing quality mobile coverage to our users, active solutions need to be deployed. This active equipment will support the 5G NR3.5 band that will provide higher speed and capacity for 5G users. As such, to meet the need for seamless mobile connectivity in Singapore and to future-proof for upcoming technology requirements, Singtel requests for the IMDA to revise the COPIF to increase the area of MIS to be provided by the BOs to cater for the deployment of active equipment in all developments.

45. In addition to the existing minimum MIS of 6m² per MNO, Singtel would like to request for additional floor space of up to 3m²[4] per MNO per development for the deployment of active equipment in all developments. In large-scale developments (e.g., Changi Airport Terminal 5), we wish to request for additional floor space of up to 6m² per MNO. Given the size of the developments and the need for pervasive coverage, more equipment would be required to be deployed to provide quality coverage for these developments. Additionally, the allocated space should also have good air ventilation to ensure that the active equipment can be safely and effectively accommodated for.

Co-ordination between stakeholders

46. Based on recent engagements with several government agencies, Singtel has noticed an increase in the number of government initiatives that have affected the MNOs' abilities to plan and maintain our mobile infrastructure. These include the monetary incentives of installing rooftop solar panels, the promotion of rooftop greenery[5], and the over emphasis on addressing radiation concerns. We request for the IMDA to co-ordinate with the other government agencies to use COPIF as baseline to ensure that infrastructure planning and the deployment of mobile equipment are factored into and not de-prioritised compared to these other initiatives.

47. There has also been an increasing trend of requests from BOs to MNOs to deploy our equipment in a short timeframe. For such cases which require expeditious efforts by the MNOs to deploy our mobile equipment, tight co-ordination between the relevant stakeholders would be paramount in the successful and quick deployment of our equipment. Co-ordination in the form of early understanding and laying out of the different stakeholders' requirements (e.g., camouflage, fire-rated compartments etc) as well as rationale for them would be key to faster deployments.

[4] In some developments, standing racks for the active equipment is required. Each standing rack will require approximately 1 m². This request is to cater for 3 standing racks in a development.
[5] Skyrise Greenery Incentive Scheme

Protection against pests

48. Singtel has observed several cases of pests damaging our equipment in Main Distribution Frame (**MDF**) rooms and Telecommunication Equipment Rooms (**TER**)[6]. This may lead to disruption to services that the affected equipment is serving. As such, Singtel requests for the IMDA to consider requiring the BOs to implement measures to ensure that the rooms are kept pests free to ensure the longevity and integrity of the equipment in the rooms. This can be done by ensuring that the rooms are adequately sealed and designed to keep pests out.

Location of MDF room and TER

49. Singtel has also observed instances where the MDF rooms and/or TER are not located at the ground level of a development. Instead, in some developments, the rooms are located at the basement level. Due to the location of the rooms, these sites are prone to water leakage and/or flooding. To ensure the safety of personnel and accessibility of the MDF room and TER, Singtel would like to request for the IMDA to consider requiring BOs to locate the rooms at the first storey or ground level of the development. This would greatly facilitate any installation, maintenance and operational activities.

Security and Access control

50. MNOs have also encountered instances of unauthorised access and usage of MDR/TER rooms in developments. To prevent unauthorised access and misuse of the rooms, Singtel would also like to request for the IMDA to consider requiring BOs to implement appropriate security measures (e.g., smart/digital locks) for **all** MDF rooms and TERs. This would be especially beneficial for facilities located in publicly accessible areas as it would allow proper tracking and accountability of shared access. Singtel notes that this practice is already adopted for the MDF rooms and TERs for selected HDB blocks. In addition to the installation of smart/digital locks, Singtel also requests for the IMDA to consider implementing harsher penalties for the unauthorised access and misuse of the MDF rooms and/or TER.

51. [redacted]

[6] Refer to Diagrams 3 – 5 under Annex B

Annex B

Diagram 1: Example of a Remote Radio Unit

Diagram 2: Example of an Equipment area including the working space required

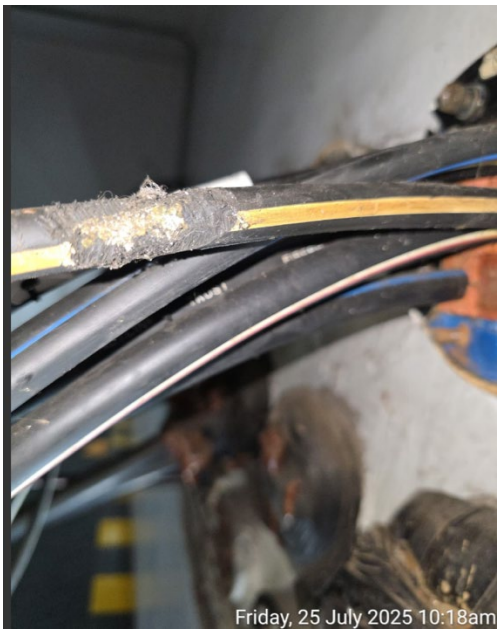

Diagram 3: Example of rodent bites along Singtel's fibre at MDF OC0402

Diagram 4: Example of rodent bites along Singtel's fibre at MDF AM316

Diagram 5: Examples of rodent defecation along Singtel's fibre at MDF TB260