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

**Submission by StarHub Ltd to the
Infocomm Media Development Authority**

8 June 2018

Contact Details:	StarHub Ltd 67 Ubi Avenue 1 #05-01 StarHub Green Singapore 408942 Phone: +65 6825 5000 Fax: +65 6721 5002 Tim Goodchild Email: timothy@starhub.com
------------------	--

Introduction:

1. StarHub Ltd (“**StarHub**”) thanks the Infocomm Media Development Authority of Singapore (the “**Authority**”) for the opportunity to comment on the proposed changes to the COPIF.
2. We sincerely appreciate the efforts put in by the Authority to facilitate the deployment of telecoms services in Singapore. In particular, the provision of rent-free Mobile Deployment Space (“**MDS**”) on rooftops will be of great assistance in ensuring that the mobile network operators (“**MNOs**”) will be able to provide comprehensive mobile coverage to customers, and meet the Authority’s stringent quality of service (“**QoS**”) requirements.
3. Nonetheless, we strongly believe that more can be done to facilitate mobile deployments, to support the Authority’s Smart Nation objectives, and to realise the full economic benefits of 4G today, and 5G in the future. Apart from providing MDS within buildings, the Authority should also be widening the scope of its review to include the provision of MDS in other types of structures, such as lampposts, towers, power stations and ventilation buildings. Access to rent-free space on such structures will be critical to facilitate the deployment of small cells needed to ensure high capacity in a 5G environment.
4. The current review needs to ensure that the COPIF is future-proof, and take into consideration upcoming technological advancements and requirements. If revisions to the COPIF are only explored at a later date, this will significantly impact the business case for 5G deployments, and slow down the development of 5G services. This will be to the detriment of all mobile customers in Singapore.
5. In terms of the implementation of the revised COPIF, we acknowledge the Authority’s requests for cooperation between licensees and building owners. We firmly agree that all parties should work together to achieve positive outcomes for customers in Singapore. However, underpinning this spirit of cooperation must be:
 - A clear regulatory regime that sets-out what can or cannot be done. If there is any ambiguity or uncertainty, this will lead to disputes over differences in interpretation (particularly given the large number of licensees and building owners in Singapore); and
 - Enforcement procedures for failure to comply with the COPIF requirements. Ultimately, the COPIF is a regulatory instrument administered by the Authority, and there needs to be a clear understanding of the implications for non-compliance.
6. We also believe that more needs to be done to facilitate emergency access to buildings. Allowing building owners up to 8-hours to respond to a request for access is not reasonable, and will unnecessary delay the restoration of telecoms services in the event of a service difficulty. We respectfully suggest that the telecoms service providers should be treated in

the same way as the power and water utility providers, and accorded priority access to their facilities within buildings.

7. In terms of the Authority's other proposals (relating to resiliency and in-building telecoms infrastructure), StarHub is generally supportive. Where relevant we have included some comments for consideration, and requests for clarification.

8. StarHub's detailed comments are attached below. We sincerely appreciate the Authority's consideration of our comments.

StarHub's Comments:

Section 1 – Use and scope of MDS provided within a development to provide mobile coverage:

Designation of rooftops as preferred location for MDS:

9. We welcome the Authority's position on this matter. We agree that the in-building mobile coverage for one development, may be better served by an outdoor site in another development. Therefore, allowing the MNOs to site their deployments at rooftops will allow various developments to mutually benefit from enhanced coverage.

10. However, it is also important to note that, in certain cases, the MNOs will prefer the MDS to be located in other parts of the building. For example, the above-ground locations of some buildings will already be covered by nearby outdoor sites, and there is a need to enhance the basement coverage for that building instead. The MNOs would therefore prefer the MDS to be located within the building basement, rather than on the rooftop. In other cases, there may not even be rooftop space available on some buildings, and the MNOs will have to find alternate locations for their equipment.

11. The location of the MDS should therefore be subject to the mobile coverage analysis carried out by the MNOs, and the building owners cannot take this as an opportunity to charge rental if the MNOs choose to site their deployments away from the rooftops.

12. It is also important for the Authority to confirm that the requirement to provide MDS applies to **all** buildings that fall within the definitions set-out in the COPIF. This will include HDB blocks and Government-owned buildings (including Military camps). If there are any buildings which are exempted from the COPIF requirements, this should be explicitly stated upfront.

Treatment of existing agreements for use of rooftop MDS:

13. We note the Authority's position that rooftop MDS will apply only after the termination or expiry of existing agreements / arrangements. However, there will be cases where the existing rental agreements are "evergreen", and without a specified end date. In such cases, we believe there needs to be a reasonable time period to transition away from such evergreen agreements to rent-free rooftop MDS.

14. We would also appreciate the Authority confirming StarHub's understanding of two issues:

- There will be cases where StarHub will need to install new mobile equipment at sites with existing rental agreements in-place. Under the revised COPIF, our understanding is that any such new equipment installations will not be chargeable.
- After the expiry of existing rooftop rental agreements, the MNOs may want their equipment to remain at the same location within a building, with that location

converted to rent-free MDS under the revised COPIF. In such a scenario, we submit that there should be an automatic conversion of the existing location to MDS, and that the building owner cannot be allowed to force the MNOs to migrate to a different location (or pay rent to remain at the existing location).

Charges incurred in connection with access to rooftop MDS:

15. While we appreciate the Authority's efforts to facilitate access to rent-free MDS on rooftops, we are concerned by the current ambiguity of the process. For example, we note the following proposed drafting under the COPIF:

- ***“where feasible**, the mobile deployment space shall be located on the rooftops of buildings”.*
- The MNOs should ***“where practicable**, take suitable measures to address any **reasonable concerns** that the developer or owner may have in relation to the aesthetics of the mobile deployment space”.*
- Where there are any disagreements over the location of the MDS, the MNOs and the building owners are required to ***“co-operate in good faith to resolve the matter in a timely manner”**.*

16. Unfortunately, these terms are vague, and will be subject to interpretation. It will be very difficult for MNOs or building owners to come to a common understanding on what the Authority deems to be “feasible”, “practicable” “reasonable” or “timely”.

17. To avoid disputes, we would respectfully request the Authority to provide clear guidance on what building owners can or cannot do in terms of: (1) rejecting requests for MDS; and (2) imposing costs on the MNOs to address aesthetic / other concerns. Such a list should be as comprehensive as possible, to ensure that building owners and MNOs are clearly guided on the COPIF requirements. Otherwise, we foresee that each building will have to be reviewed on a case-by-case basis, which significantly increases the risk of disputes, and will invariably slow down the process of mobile deployments. Such an outcome would be clearly undesirable: impacting the provision of coverage to customers, and increasing the resource burden imposed on the Authority, building owners and MNOs.

18. Based on our experience, we strongly believe that many building owners (particularly for residential buildings) will have strong reservations with providing rooftop space to the MNOs. Without clear guidance from the Authority, we foresee:

- A significant uptrend in the number of dispute cases brought to the Authority's attention; and
- More regulatory changes to the COPIF going forward, to address the ambiguities raised by the current proposed COPIF.

19. In addition, rather than stipulating that building owners respond in a “*timely manner*” to requests from MNOs, there needs to be guidance on how quickly the building owners should respond to requests for MDS. We have encountered cases where building owners take weeks to respond to requests, or refuse to acknowledge them altogether. This unreasonably delays the deployment of mobile equipment, and impacts the coverage that mobile customers can enjoy.

20. To address this, there should be a clear timeline in place for building owners to provide a response to requests from the MNOs.¹ We respectfully suggest that this be set at **five working days**. If building owners do not respond within this time period, the MNOs should be allowed to request the Authority’s assistance to facilitate access.

21. We would also appreciate the Authority’s response on the following matters:

- Today, certain building owners provide equipment space in exchange for indirect payments (e.g., sponsorships). We would appreciate confirmation that, under the revised COPIF, building owners cannot require any form of payment for MDS (whether direct or indirect).
- The revised COPIF states that building owners are not allowed to impose “*any costs, expenses, charges or rent (including but not limited to administrative charges and security escort charges)*” on licensees accessing space mandated under the COPIF. However, in earlier clarifications on the COPIF 2013, the Authority has also stated that “*where the MDS is located in secured areas and where it is necessary for the building owners or developers to provide security ... building owners or developers will be allowed to recover the actual incurred cost*”. It is therefore very important to clarify whether this clarification is still relevant under the revised COPIF. It would be incongruent for the Authority to issue a regulatory document clearly stating charges are not applicable, only to issue a subsequent clarification that charges are applicable under certain circumstance. We respectfully suggest that all such charges should not be imposed on the MNOs. We have regulatory obligations to meet stringent QoS obligations, and should not have to pay additional fees each time access to the MDS is required.
- In terms of utility costs, this should not be left to commercial discussions between the Authority and the MNOs. Clear guidance needs to be set-out on how charges should be calculated, and that the MNOs are not required to pay administrative charges to building owners for any utility fees. Separately, we believe that building owners should not seek to impose utility fees for low-power devices (such as repeaters). Repeater equipment is typically installed to provide coverage to hard-to-reach locations, such as basements, which are usually not commercially viable to serve. If MNOs are ready to incur additional equipment costs to deploy repeaters, we believe that it is reasonable for the building owners to absorb the recurrent utility fees incurred.

¹ Such requests would include not just requests for MDS, but also requests to carry out site surveys.

Smart Nation and preparations for 5G:

22. As highlighted above, we are concerned that the proposed revisions to the COPIF are not sufficiently forward-looking, and will not be future-proof. Today, the MNOs are already required to source for many non-building locations for the deployment of their outdoor base stations. These locations include: (1) lampposts; (2) towers; (3) sub-stations; and (4) ventilation buildings. In many cases, high rental charges are imposed on the MNOs.

23. Going forward, we foresee a significant increase in the amount of mobile capacity that will be needed to support the Government's Smart Nation objectives. With the upcoming advent of 5G, we are potentially looking at the deployment of large number of small cells to provide the capacity needed to support 5G services. This has been acknowledged by the Authority during its consultation on "*5G Mobile Services and Networks*".

24. There is therefore a pressing need to ensure that the regulatory framework in Singapore is future-ready, and conducive to support both Smart Nation and 5G. If the Authority only reviews the COPIF when new developments occur, this will create delays, and impede the deployment of new services to customers.

25. We therefore respectfully repeat our suggestion that the COPIF should also be expanded to include the provision of MDS on non-building locations.

Section 2 – Requirements of Space and Facilities to be provided to MNOs:

Location of MDS:

26. We appreciate the Authority providing guidance on suitable locations for MDS. As highlighted above, we believe that more guidance should also be provided on the following: (1) timelines for building owners to respond to requests from the MNOs; (2) the criteria under which building owners can reject requests for MDS; and (3) the scenarios under which building owners can impose costs on the MNOs to address aesthetic / other concerns. As comprehensive a list as possible must be provided for under the COPIF, to avoid disputes, and ensure that customers can enjoy mobile coverage as soon as practicably possible.

27. In addition, under the revised COPIF, the Authority has stated that building owners may require MNOs to relocate their equipment deployed within the MDS where the building owners “*reasonably desires to use the mobile deployment space for other purposes*”. As stated under the COPIF, our understanding is that the costs incurred by the MNOs should be reimbursed by the building owner, and that a suitable alternative location is provided for MDS. We would respectfully request the following clarifications:

- Could the Authority confirm that the location of the alternate space provided by the building owners is subject to the MNO’s agreement? Otherwise, there will be disputes as to the suitability of the alternate location.
- Could the Authority confirm that the building owner can only ask the MNOs to relocate their equipment if they intend to use the MDS for other purposes?

From our understanding, we would appreciate if the Authority could confirm that an MNO can only be required to relocate from an existing MDS if the building owner: (1) has plans to use the MDS for other purposes; (2) provides an alternate MDS which is agreeable to the MNO; and (3) covers the costs incurred by the MNOs for the relocation.

Size of MDS:

28. We respectfully disagree with the Authority’s position that the size of the MDS shall remain unchanged from the 2013 COPIF. We do not believe that this is a reasonable position for the following reasons:

- While 2G services have ceased, the MNOs are re-using 2G spectrum for 3G and 4G services, with 5G services upcoming. The number of spectrum bands that are being used to provide mobile services has grown significantly. Since the last COPIF was issued, the Authority has released the 700 MHz, the 2.3 GHz and the 2.5 GHz bands. The Authority has also discussed the release of the 800 MHz band, the L-band and the extended C-band. As the number of spectrum bands increase, more equipment will be needed (not less).

- The 2013 COPIF was implemented in a scenario with three MNOs. There are now four MNOs. Keeping MDS the same will invariably result in disputes if the existing MNOs are expected to give up their space in order to accommodate the new MNO.
- In certain locations, the MNOs may have no choice but to co-exist within one building, to provide coverage to the area. For example, an area with multiple low-rise buildings, with only one higher-rise building. Regrettably, the Authority appears to be assuming that the MNOs can find multiple nearby buildings which can accommodate their equipment. This assumption will not always hold true.
- MDS is now needed to cater, not just for in-building coverage, but also outdoor coverage. This means more equipment needs to be added, not less. In particular, this point needs to be considered when the size of the MDS is calculated. Rather than just factoring the number of units / floor area of the building itself, the building owner should be required to also take into consideration the outdoor coverage area of the mobile equipment. For example, a typical outdoor site will provide a coverage radius of 300 metres, which equates to a coverage area of over 200,000 m². The MDS should therefore be commensurately sized. It is not tenable if the Authority allowed the expansion of the mobile coverage area to be served by an MDS, but have the MDS size remain the same.

29. Based on StarHub's estimates, each MNO will need a minimum of 12m² for their mobile equipment. We respectfully request the Authority to consider this recommendation favourably.

Ancillaries and associate installation, plant or system:

30. We note the Authority's position on this matter. However, we would like to seek the following clarifications:

- StarHub's understanding is that the area around the equipment used for maintenance and servicing purposes should be excluded from the MDS. We would appreciate the Authority's confirmation on this point.
- Where equipment is wall-mounted, please confirm that the space under the equipment should not be considered as part of the MDS. We are concerned that the building owners may claim that the area directly under wall-mounted antennas should also be included in the calculation of MDS.
- The building owners cannot require the MNOs to install equipment on the floor when they can be wall-mounted. Otherwise, this will penalise the MNOs, and artificially increase the size of the MDS. As a proposal, the Authority may wish to state that, where building owners require the MNOs to install equipment on the floor, such equipment should be excluded from the calculation of MDS.

Definition of mobile coverage area: gross floor area ("GFA") + land/site area:

31. We agree with the Authority's proposal on this matter. We would also request that the Authority make it mandatory for the building owners to disclose (upon request by the MNOs) the GFA and land/site area for their buildings. This will allow the MNOs to have sufficient information to understand the MDS available for that building.

MDS for other locations:

32. As highlighted above, apart from MDS within buildings, it is also important for the Authority to review whether MDS should be allocated at other areas. As the Authority's QoS framework applies island-wide, we strongly believe that MDS should be applied to all types of infrastructure, including structures such as lampposts, ventilation buildings and substations. Today, the MNOs pay significant amounts for the rental of such structures. To ensure pervasive coverage in a Smart Nation, and to facilitate the provision of 5G services, the COPIF needs to be reviewed holistically, and for the MNOs to obtain space in all necessary locations.

Section 3 – Use of and Access to Space and Facilities by Licensees:

Use of COPIF space and facilities: rules of usage:

33. We agree that licensees should efficiently use space allocated for telecommunication services. However, it is important to bear in mind that licensees will typically have already obtained, upfront, consent from the building owner for the deployment of their equipment (including any cabling works). It should not be the case that, where a building changes its owners, licensees are then required to re-work their existing installations to meet new requirements.

34. We also respectfully disagree with the Authority’s proposals that the MNOs should bear costs related to:

- Any regulatory requirements associated with the provision of the MDS.

The provision of MDS, like the provision of a main distribution frame (“**MDF**”) room, is a regulatory obligation under the COPIF. Licensees do not pay building owners for the regulatory costs associated with the provision of MDF, and it is unclear why MNOs are required to pay any regulatory costs associated with the provision of MDS. Furthermore, MNOs have an existing regulatory obligation to comply with the Authority’s QoS standards. It is unreasonable for the Authority to amend its existing COPIF, and expect MNOs to assume additional costs to meet an existing regulatory requirement.

- The provision of lighting and ventilation to the MDS.

The provision of lighting and ventilation to space allocated under the COPIF should be a basic requirement, similar to the building owner ensuring that it provides a safe working environment for licensees. We understand that the Authority’s assumption may be that rooftop space will be the default MDS. However, as discussed above, there will be cases where rooftop space is unavailable, and the MNOs will need an alternative location. For example, the MNOs may need space in the basement of the building, to enhance basement coverage. If the only available space is an enclosed area, it should not be the MNOs responsibility to pay the building owner to provide basic amenities for the MDS.

35. Under Section 2.5.7 of the revised COPIF, the Authority has stated that where building owners require licensees to submit any proposal for cabling works, the building owners are required to provide “*building plans, floor plans or blueprints*” to licensees. However, the Authority has removed the statement (found in COPIF 2013), that such provision of plans will be “*at no cost to the licensee*”. We would respectfully request the Authority to reinstate this statement, to make it clear that licensees will not be obliged to pay for such plans / blueprints.

Access to COPIF space and facilities – emergencies:

36. We agree that it is important to have established procedures in place between building owners and licensees to handle emergency situations. However, we respectfully disagree with the Authority's proposed timelines for building owners to provide access to COPIF space and facilities.

37. Where a building is manned, access should be **immediately** granted to licensees upon request. If there is a security guard stationed at the building, there is no logical reason why licensees should have to wait up to 1-hour to gain access to their equipment.

38. Where a building is unmanned, access should be granted within 3.5-hours. It is critical for access to be provided within the 4-hour mark which may be the typical lifespan of back-up batteries. If licensees can access their equipment before the back-up batteries are drained, they may be able to pre-empt an outage from occurring in the first place.

39. The timeframes for granting of access to unmanned buildings should start upon the building owner being first notified by the licensee. Building owners should not be able to claim that the clock has not started simply because they did not pick-up the licensees' calls.

40. We also understand that other utility providers (like power and water) are accorded priority access to buildings in the event of any incidents affecting their services. Given the importance of telecoms services, the Authority's licensees should also be granted similar priority access. The Government has noted the critical nature of telecoms, and it would be incongruent if telecoms licensees are accorded lower priority than other utility providers.

41. Ultimately, the priority is for licensees to restore services as quickly as possible, to minimise disruption and customer unhappiness. Having facilitative processes in place to allow licensees access to their equipment within buildings will minimise the downtime experienced by customers.

42. In terms of the Authority's proposal that it will "*allow recovery of costs for Emergency Access*", it is important to set guidelines on how such costs should be calculated. We respectfully suggest the following:

- Building owners of manned buildings, should not be allowed to impose any costs for emergency access. The building would already have dedicated the necessary resources to handle requests for after-hours access, and there is no reason why its business-as-usual costs should be passed-on to licensees.
- Charges to be imposed for emergency access to unmanned buildings should be set-out upfront. This provides clarity on the charges that licensees will incur when they need to carry out emergency works at a building.
- All charges imposed on licensees should be capped at a reasonable limit. For example, based on a max hourly rate, and up to 2-hours.

43. In addition, as we highlighted in our earlier comments, we also periodically encounter cases where building owners carry out maintenance on their building's mechanical and electrical ("M&E") systems, without notifying licensees in advance. When such M&E maintenance impacts the telecoms services provided to the building, it appears as though an outage has occurred, and we have had to incur unnecessary resources to dispatch staff to investigate. To avoid such a scenario, we respectfully submit that there should also be a COPIF obligation that building owners notify licensees prior to the commencement of any M&E maintenance.

Enforcement Regime for the COPIF:

44. A key issue for StarHub is the enforcement regime for the COPIF. Underpinning the rules and procedures set-out in the COPIF must be a robust system for ensuring that building owners comply with the requirements. There is little point to have a consultation on how the COPIF should be revised, if building owners can simply refuse to comply with the requirements.

45. Today, StarHub continues to encounter situations where building owners do not comply with their COPIF obligations. Where these issues are escalated to the Authority, they may take prolonged periods to resolve. While we sincerely appreciate the Authority's assistance, the current escalation process creates:

- Long delays in resolving COPIF-related issues. Before any escalation to the Authority, StarHub will have to go through a long negotiation period with the building owner to attempt to explain the COPIF requirements. After escalation, the Authority will then provide the building owner with a period of consideration and response. If the matter still cannot be resolved, the Authority may then issue a directive to the building owner for compliance; and
- Additional workload and unnecessary resources incurred for all parties involved. In many cases, to ensure that customers are provided services on-time, StarHub has had to accede to the building owners' requests, even where it directly contradicts the COPIF.

46. As we have previously suggested, we would respectfully submit that the Authority adopt a "fast-track" approach, by issuing directives to building owners who have clearly failed to comply with the COPIF requirements. As the COPIF has been in place for over 15-years (with the current version in-place for 5-years), building owners cannot claim to be unaware of their obligations. Therefore, where the breaches are blatant, enforcement action must be taken against the building owners in question to send a clear signal to the industry that the COPIF must be complied with.

47. Given the stringent regulatory requirements imposed on telecoms licensees, it is only reasonable that building owners must similarly be held to the requirements set-out under the COPIF. Ultimately, the COPIF is meant to benefit customers in Singapore, and speeding-up the resolution of COPIF-related issues is in the best interests of customers.

Section 4 – Requirements to Enhance Network and Service Resilience:

Buildings housing vital services:

48. We would suggest that the types of buildings that require the deployment of additional telecoms infrastructure should also include the following:

- Buildings housing all types of healthcare facilities, including polyclinics. We note that the increasing trend is towards telemedicine, and polyclinics will be key players in this field;
- Government buildings, including not just office buildings, but also buildings belonging to the Military, Civil Defence and Police. Such buildings serve critical public functions, and need to have diverse infrastructure;
- Higher education buildings, which may require significant amounts of telecoms infrastructure for teaching and research purposes;
- Buildings reserved for use in emergency situations (e.g., as bomb shelters or evacuation points); and
- Key public transportation nodes, such as MRT stations.

49. Apart from having diversity of telecoms services, it is also imperative that these buildings also have multiple electricity feeds into the building. Therefore, we suggest that the Authority should also work with its electricity regulator counterpart to ensure that key buildings in Singapore are provided with duplicate power feeds. Having multiple telecoms feeds without corresponding power feeds is not sufficient to ensure resiliency of services.

Provision of “Meet-me-rooms” (“MMRs”) in data centres:

50. As highlighted in our earlier comments, we have seen an increasing number of data centre owners which have carved out specific facilities for resiliency and redundancy purposes, and charge licensees who wish to use such facilities. For example, we are aware of data centres that have designated a separate set of lead-in pipes connecting to MMRs, and use of those facilities are chargeable.

51. We respectfully seek the Authority’s confirmation that, where a data centre is required to provide resilient telecoms infrastructure pursuant to the proposed COPIF, access to such infrastructure **cannot be chargeable**. If data centre owners wish to separately set-up another MMR (on-top of the COPIF provisions), usage of that MMR must be based on commercial negotiations only. Data centre owners cannot mandate that licensees connect into these chargeable MMRs.

Section 5 – Provision of Cables for Telecommunication (Non-Broadband Coaxial Cable) Systems in all Developments:

Residential developments: requirements for optical fibre cable installation:

52. We support the Authority's approach. However, we note that there may be space constraints if building owners are required to install multiple fibre termination points within the in-building risers. In implementing the revised COPIF requirements, care needs to be taken to ensure that enough space is provided for licensees' installation of their own equipment, and to provide a safe working environment for all parties.

RJ45 outlets and supporting power outlet requirements:

53. We support the Authority's proposals. The Authority may also wish to provide some high-level guidance on the location of the additional RJ45 outlets to ensure that they are not located in areas which may create unnecessary inconvenience to the home owners.²

Non-residential developments: requirements for the provision of internal telecommunication wiring:

54. Similarly, we support the Authority's proposals, and our primary concern is whether the proposals will result in space constraints within the riser. Again, care needs to be taken to ensure that enough space is provided for licensees' installation of their own equipment, and to provide a safe working environment for all parties.

55. In addition, we would also respectfully suggest that the building owner be required to install dividers within the cable tray in the riser. This will provide a logical partition for each licensees' fibres, and allow a neat installation. We propose three dividers to be installed, to cater for (at the minimum) the three Public Telecommunication Licensees in Singapore. We understand that a similar concept has been implemented by HDB.

² For example, it may be necessary to specify that the RJ45 patch panel(s) in the living room and bedrooms should be adjacent to the RG6 coaxial cable. This will ensure that customers can transition between the receipt of free-to-air television via an antenna, to receiving it via a set-top box, without having to physically shift their television set.

Section 6 – Developments consisting of 1 or more Road or Mass Transit System (“MRT”) Tunnels:

56. We are generally agreeable with the Authority’s proposals.

57. However, we would highlight our earlier comments on the provision of MDS at ventilation buildings. Today, these buildings are not obliged to provide MDS on rooftops. This creates significant inefficiencies as these buildings are typically the only buildings located near to the road tunnel’s slip roads. We would respectfully seek the Authority’s confirmation that there will be a requirement for MDS to be provided at the ventilation buildings to: (a) serve the tunnel; and (b) for outdoor coverage via the rooftops.

Conclusion:

58. In summary, StarHub's points are as follows:

- The MDS need not necessarily always be located on the rooftops. The final location of the MDS should be subject to the MNOs' coverage requirements.
- The provision of MDS should be imposed on **all** buildings. If there are any buildings that are not covered by the COPIF, this should be stated upfront.
- There should be a reasonable time period to transition away from "evergreen" rental agreements to rent-free rooftop MDS.
- The Authority should provide clear and comprehensive guidance on: (1) when building owners can reject requests for MDS; (2) how the building owners can impose costs on MNOs in relation to the provision of MDS; and (3) what constitutes a timely response by building owners to requests from MNOs. Such information is critical to minimise the occurrence of disputes.
- The COPIF needs to be a forward-looking document that is future-proof, and meets the Authority's Smart Nation objectives and allows Singapore to be 5G-ready. Apart from requiring MDS to be provided in buildings, there is also a need for the Authority to require the provision of MDS in non-building locations such as: (1) lampposts; (2) towers; (3) sub-stations; and (4) ventilation buildings.
- There needs to be an increase in the size of MDS. Each MNO will need a minimum of 12m² for their mobile equipment to cater for: (1) increase in equipment needed to cater for more spectrum bands; and (2) to provide outdoor as well as indoor coverage.
- We disagree that MNOs should be required to bear costs in relation to: (1) regulatory requirements associated with the provision of MDS; and (2) the provision of lighting and ventilation for MDS. These should be inherent requirements imposed on building owners, and not new costs that the MNOs have to incur.
- The proposed emergency access procedures under the COPIF need to be tightened. The restoration of telecoms services need to be accorded priority, like the restoration of other utilities (such as power and water). Access should be provided to licensees: (1) immediately for manned buildings; and (2) within 3.5 hours for unmanned buildings.
- Any charges imposed on licensees for the provision of emergency access should only apply for unmanned buildings, and be capped at a reasonable amount (e.g., based on 2-man hours).

- Building owners should be required to notify licensees of any planned M&E maintenance.
- A clear enforcement regime for the COPIF needs to be implemented. This is essential to ensure building owners extend the necessary cooperation to licensees, and all parties can work together in the benefit of customers.
- We agree with the Authority's proposals in relation to the installation of internal wiring within residential and commercial buildings. Our key concern is that licensees continue to have sufficient space to carry out work (in a safe environment) within the risers.
- As points of clarification on the revised COPIF, we would also appreciate the Authority's response to our questions and requests as set-out in paragraphs 14, 21, 27, 30, 35 and 51 of this response.

59. StarHub is grateful for the opportunity to comment on this matter and we appreciate the Authority's consideration of our comments.