SINGAPORE TELECOMMUNICATIONS LIMITED AND SINGTEL MOBILE SINGAPORE PRIVATE LIMITED

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

1. INTRODUCTION

1.1. Singapore Telecommunications Limited and SingTel Mobile Singapore Private Limited (collectively **SingTel**) are licensed to provide info-communications services in Singapore. SingTel is committed to the provision of state-of-the-art info-communications technologies and services in Singapore.

1.2. SingTel has a comprehensive portfolio of services that includes voice and data services over fixed, wireless and Internet platforms. SingTel services both corporate and residential customers and is committed to bringing the best of global info-communications to its customers in the Asia Pacific and beyond.

1.3. In December 2011 SingTel submitted our responses to the Info-communications Development Authority of Singapore (**IDA**) in response to the first consultation paper issued in relation to the review of the Code of Practice for Info-Communication Facilities in Buildings (**COPIF**).

1.4. SingTel welcomes the opportunity to respond to the second consultation paper issued by the IDA on 22 June 2012 (**Draft COPIF**).

1.5. This submission is structured as follows:

Section 1 – Introduction
Section 2 – Executive Summary
Section 2 – Specific Comments

2. EXECUTIVE SUMMARY

2.1. SingTel welcomes the additional changes proposed by the IDA to the Draft COPIF in line with emerging technologies and increasing end user requirements in relation to the provision of telecommunication services and coverage in developments.

2.2. SingTel appreciates the further changes made to the Draft COPIF since the first COPIF consultation as they provide clarity on the process to be adopted by the developer or owner should the developer or owner require a telecommunication licensee to bear the utility charges for the installation, plant or system used to provide telecommunication services to the development.

2.3. However, SingTel does not agree that telecommunication licensees should be responsible to provide and install the necessary electrical installations e.g. distribution panels, cabling, separate utility meter and other accessories to facilitate the metering of the utility usage incurred. As the electrical facilities form part of the infrastructure of the development, the cost of such electrical installations should be borne by the developer or owner. In the event that the developer or owner requires a telecommunication licensee to bear the utility charges for the installation, plant or system used to provide telecommunication services to the development, the developer or owner should be responsible for providing and installing the necessary electrical installation e.g. distribution panels, cabling, separate utility meter and other accessories. Thereafter, the telecommunication licensee will be responsible for paying the utility charges "as incurred" directly to the utility provider. SingTel submits that this to be a more reasonable and equitable approach. This is also consistent with the current approach established between HDB and telecommunication licensees.

2.4. Notwithstanding the fact that the previous COPIF will be cancelled upon the Draft COPIF becoming effective, SingTel also requests that the IDA clarify in the Draft COPIF that, notwithstanding the provisions in section 2.3 of the Draft COPIF, the developer or owner may not seek reimbursement from the telecommunication licensee for any utility charges incurred prior to the effective date of the new COPIF.

2.5. SingTel welcomes the IDA's proposal to ensure that mobile telephone operators (**MTOs**) are allocated a space within the development for the purpose of providing mobile coverage without rental, access, escort or other charges [subject to section 2.5.5 of the Draft COPIF]. Nevertheless, SingTel submits that the Draft COPIF should give the mobile deployment space (**MDS**) the same treatment as the Main Distribution

Frame Room (**MDF**) which requires that the developer or owner provide basic requirements such as power, lighting and ventilation [and also provide additional basic facilities including cable trays, cables and a separate utility meter] to provide mobile coverage. Further, the Draft COPIF should define specific conditions when determining the location of the MDS, the size of the MDS and whether more than one (1) MDS is required in each development. SingTel therefore submits that the IDA should re-consider its position relating to the specifications of the MDS and the facilities therein.

2.6. SingTel also welcomes the IDA's attempt to set out clearly, in the Draft COPIF, the processes and broad principles for the use of space and facilities provided within a development (**COPIF space and facilities**) to serve areas and/or properties outside of the development (**external properties**).

2.7. To provide more clarity to telecommunication licensees, SingTel requests that the IDA include in the Draft COPIF further guidance in relation to the use of the COPIF space and facilities to serve external properties as long as priority is accorded to meet the requirement of the development.

2.8. SingTel also requests the IDA's confirmation that the processes and broad principles specified in the Draft COPIF will only apply to additional use of COPIF space and facilities to serve external properties from the effective date of the new COPIF i.e. any existing use of COPIF space and facilities to serve external properties as at the effective date of the new COPIF shall remain unaffected i.e. where telecommunication licensees are using COPIF space and facilities to serve external properties as at the effective date, the telecommunications licensees have a right to continue to do so pursuant to the new COPIF.

2.9. As the IDA would appreciate, telecommunication licensees' existing telecommunication network and infrastructure are already commissioned with live services and customer circuits. It will be costly and result in service disruption if telecommunications licensees were required to migrate these services and circuits to alternative infrastructure (if feasible to do so). Such migration will result in extensive service interruptions island-wide. For customers subscribing to multiple telecommunication licensees, the impact will be compounded since they will be affected by migration activities undertaken by various telecommunication licensees. Hence, it is only prudent that any existing use of COPIF space and facilities used to serve external properties as at the effective date of the new COPIF shall remain as is.

2.10. In terms of providing further guidance, we request that the IDA clarify certain circumstances (without limitation) where the use of COPIF space and facilities to external properties would be contemplated such as:

(a) where there are no alternatives to serve external properties e.g. the external property is a landed property or has no MDF room or the MDF room is fully utilised;
(b) for the deployment of a typical telecommunications ring topology network architecture where it is necessary to designate some of the COPIF space and facilities as hubs so as to ensure path diversity and resiliency; and
(c) where is it more practical or efficient to concentrate the telecommunication lines in a single active equipment platform housed within the hubs.

3. SPECIFIC COMMENTS

SECTION 1 – Provision of Space and Facilities to Facilities-Based Operators who are Licensed to Provide Public Mobile Telecommunication Services

Minimum mobile deployment space

3.1. In SingTel's response to the first consultation, we had submitted that the minimum space required by each MTO for a Residential Development of at least twenty (20) floors was approximately $12m^2$ or a total of $36m^2$ for the entire MDS. We are disappointed that the IDA has proposed not to allocate the required space and only increased the total size of the MDS from $12m^2$ to $18m^2$. This is insufficient to meet the needs of the MTOs.

3.2. An MDS of $18m^2$ equates to only $6m^2$ per MTO which will be completely occupied by the equipment footprint and does not provide an allowance for the combiners or the necessary "walk-around" space for MTO staff to access the equipment for maintenance purposes.

SingTel

3.3. SingTel strongly recommends that the IDA revise the minimum MDS space as follows to provide the required space for all the necessary MTO equipment and "walk-around" space for access to the MTO equipment:

Table 1 Mobile deployment space to be provided in each relevant development

Total number of residential units in the development	**Minimum mobile deployment space (m^2)**	**Minimum height of mobile deployment space (m)**
80 to 200	26	3
201 to 600	52	
601 to 1,500	78	
>1,500	To consult IDA and MTOs	

Table 2 Mobile deployment space to be provided in each relevant development

Total mobile coverage area ('000m^2)	**Minimum mobile deployment space (m^2)**	**Minimum height of mobile deployment space (m)**
> 2 to ≤ 6	26	3
> 6 to ≤ 20	52	
> 20 to ≤ 100	78	
> 100 to ≤ 200	104	
> 200	To consult IDA and MTOs	

Where the number of residential units in the development exceeds 1,500 units or the development is more than 200,000m^2, the developer or owner should consult the IDA and the MTOs on the minimum size of the MDS. The MTOs may require a site visit to review the layout of the development in order to decide on the most appropriate solution which will determine the minimum size of the MDS required to provision mobile coverage in the development.

3.4. In addition to the above, the MDS should meet the following MDS specifications:

(a) Width: at least 2m.
(b) Length: at least 3.8m including an allowance for the door to be opened more than 90 degrees to allow MTOs sufficient room to remove modular equipment.

Second MDS in buildings of more than twenty (20) storeys

3.5. SingTel submitted in our earlier response to the first consultation that a second MDS should be located at the 20th storey for residential developments with more than twenty (20) storeys. We note that the IDA has not included the additional MDS in the Consultation Paper or addressed the need for the additional MDS to provide mobile coverage in the upper storeys of tall buildings of more than twenty (20) storeys.

3.6. As the IDA can appreciate, there is a growing trend for taller residential developments in Singapore of over forty (40) storeys (e.g. the forty-two (42) storey HDB blocks in Toa Payoh, the fifty (50) storey Pinnacle@Duxton with a viewing gallery on the 51st storey, and the seventy (70) storey The Sail). SingTel [and the other MTOs] have on numerous occasions highlighted to the IDA the real difficulties encountered in providing adequate mobile coverage to units in the upper storeys of tall buildings of more than twenty (20) storeys. SingTel (and other MTOs) face instances of developers or owners rejecting the proposed solution to provide adequate coverage for the upper storeys due to aesthetic reasons and/or perceived health hazard. Further, there are often no other alternatives as there are no surrounding buildings of an equivalent height from which to provide the coverage; hence the requirement to allocate specific space for a second MDS for MTOs to install equipment for the purpose of providing mobile coverage to residents in the upper storeys.

3.7. In light of the above, SingTel submits that it is imperative for the developer or owner to allocate a second MDS at the 20th storey [and every twenty (20) storeys thereafter] to prevent mobile coverage "holes" that would result in dropped calls, inability to make or receive calls or roaming onto the neighbouring countries' networks.

Location of the MDS should be determined in consultation with the MTOs

3.8. The Draft COPIF allows the developer or owner to locate the MDS at any unused space in the development, however, SingTel would highlight that not all locations within the development are suitable for the MDS. For example, the MDS should not be located at an isolated space away from the main building(s) such as the guard house, dustbin housing, standalone single storey block etc.

3.9. Furthermore, SingTel notes that in relation to the MDF room, there are specific conditions imposed on the location of the MDF room in multi-storey buildings however, the Draft COPIF does not impose similar conditions in relation to the

location of the MDS. SingTel submits that there is no reason for the MDS to be considered any less important than the MDF room, therefore conditions on the location of the MDS should also be imposed. . Specifically, the MDS should be located:

(a) on the first or second storey where the development has no basement or only a single basement level; or
(b) on the first or second storey, or the first basement level where the development has multiple basement levels.

The MDS should also be subject to the same provisions as the MDF room in the event a flooding occurs at the MDS.

3.10. Notwithstanding the above, the most ideal locations for the MDS would be at the carpark, rooftop (if any), near the main distribution frame (**MDF**) room or the area(s) which requires mobile coverage. The developer or owner should consult the MTOs where it is unable to locate the MDS in these areas; and the MTOs, together with the developer or owner, may carry out a joint site survey to determine the best alternative location subject to mutual agreement between the developer or owner and the MTOs.

Separate mobile deployment spaces within the same development

3.11. The Draft COPIF allows the developer or owner to allocate the MDS in separate spaces provided that the total space meets the minimum MDS space. SingTel does not agree with this proposal. SingTel submits that the Draft COPIF should not allow developers or owners to allocate the MDS in separate spaces within the development.

3.12. The MTOs often share common equipment and/or infrastructure such as combiners therefore all the mobile equipment should be deployed in the same space. Separate spaces will require more resources for installation of equipment and infrastructure (e.g. more cable trays and cables to link up the common infrastructure and we will not be able to optimise the allocated space due to the need for multiple sets of common equipment. Furthermore, there will be a higher signal loss due to cable interconnection between the base stations located at the different MDS.

Installation of facilities, lighting and ventilation to serve the installation, plant or system at the MDS

3.13. The Draft COPIF specifies that the developer or owner is not required to provide facilities (e.g. cable trays and power points), lighting or ventilation at the MDS. However, the developer or owner is required to provide all these in the MDF room.

3.14. SingTel seeks the IDA's clarification as to the different requirements imposed on the MDS and MDF room. The mobile penetration rate stood in Singapore was at 150.6%[1] as at May 2012. With increasing use of mobile devices for voice and data services and applications, it is essential that MTOs be provided with equivalent facilities, lighting or ventilation to provide mobile coverage within and beyond the development.

3.15. Once the location of the MDS is confirmed [at any of the preferred locations or in another location which has been mutually agreed upon between the MTOs and the developer or owner] SingTel submits that the developer or owner should provide the basic requirements such as cable trays, power points and other necessary electrical installations including cables and a separate utility meter [where the developer or owner requires the MTOs to bear the utility charges for the equipment installed in the MDS], the licensed electrical worker (**LEW**) endorsement [where necessary], lighting and ventilation.

3.16. Refer to Sections 4 and 7 for more information.

Charge(s) for access to or use of MDS

3.17. The Draft COPIF states that no charge or rent is to be imposed or collected from a licensee for the use or access to the relevant space and facilities including administrative charges, security escort charges and reinstatement costs. Further the developer or owner may not impose additional requirements on the licensee in granting the right of access or use of the relevant space and facilities.

3.18. SingTel has already been informed by several building owners that they intend to continue to impose a charge(s) for the MDS after the Draft COPIF is effected as the current rental is a lucrative source of income. In fact, these building owners have even gone so far as to indicate that the charge(s) may be termed/described differently so as not to be deemed a charge or rent for access to or use of the MDS.

[1] www.ida.com.sg

3.19. SingTel requests that the IDA ensure that the Draft COPIF MTOs be allowed to raise such unreasonable charges to the IDA under a dispute process. Where the developer or owner does not allow the MTO(s) disputing the charge(s) access to or use of the MDS, the MTO(s) should be waived from complying with the quality of service (**QOS**) requirements for that development until the dispute is satisfactorily resolved.

Alteration, removal, relocation or diversion charges

3.20. SingTel seeks the IDA's confirmation that, subject to section 16.4.7 of the Draft COPIF, where the developer or owner requires that the MDS be altered, removed, relocated or diverted to a different location for flooding or other reasons, the developer or owner shall bear the costs of all such alteration, removal, relocation or diversion.

MDS in road or MRT tunnels

3.21. The Draft COPIF requires that the developer or owner allocate $40m^2$ for the MDS at each facility building or its equivalent [for road tunnels] and each underground MRT station. SingTel submits that this is insufficient.

3.22. Each MDS should be at least $50m^2$ to cater for instances where the usable space is blocked by other infrastructure within the development (e.g. some of the usable space in the underground MRT stations on the Downtown Line is blocked by the air conditioning fan coil unit).

SECTION 2 – Provision of Cables for Telecommunications (Non-Broadband Coaxial Cable) System in all Residential Properties

3.23. In relation to the IDA's proposal that pre-installed optical fibre cables be terminated in fibre interface points located in the gate pillar/telecommunication risers, SingTel submits that this is not feasible or practical due to the limited amount of space in the telecommunication riser especially in residential developments with a high number of residential units per floor.

3.24. SingTel submits that what is feasible and practical is for the developer or owner to terminate the pre-installed optical fibre cables into a fibre patch panel (**FPP**) in the telecommunication riser. The FPP should incorporate a cable management function to

facilitate the ease of access to the pre-installed fibre optical cables by fibre operators. The pre-installed optical cable in the FPP should be clearly labelled, i.e. unit number and fibre strand number, prior to the development obtaining its Temporary Occupation Permit (**TOP**).

3.25. Further, to address the IDA's concern of potential restriction of access to the FPP should the FPP be installed and maintained by a specific fibre operator, SingTel submits that the developer or owner should be responsible for installing and maintaining the FPP.

3.26. With respect to the proposed requirement that a minimum of one (1) 2-core optical fibre cable be installed from the gate pillar or telecommunication riser, terminating at a fibre termination point within each residential unit, SingTel requests the IDA's confirmation that in the event that more than one (1) 2-core optical fibre cable is required by the developer or owner, it is the developer or owner's responsibility to augment the optical fibre cable from the gate pillar/telecommunication riser to the residential unit. In this regard, the FPP should be designed to allow future network augmentation.

3.27. For the avoidance of doubt, SingTel's recommendation for the installation of a FPP is also proposed for landed properties where the FPP will be located in the gate pillar.

3.28. In relation to the installation of the RJ45 sockets in the living room and each bedroom, SingTel submits that it will be beneficial for the Draft COPIF to provide guidance on the where the RJ45 sockets should be located. In this regard, SingTel submits that for the living room, one (1) RJ45 socket be located next to the television (**TV**) point while the other RJ45 socket be located on the opposite wall. For each bedroom, we would propose that the RJ45 socket be located next to the TV point.

3.29. The Draft COPIF separately indicates that the fibre termination point (**FTP**) and RJ45 patch panel may be located in the utility room or closet. To avoid a situation whereby the FTP and RJ45 patch panel are located in two (2) different locations within a residential unit, SingTel submits that it be clarified in the Draft COPIF that the FTP and RJ45 patch panel must be located together, either in the utility room or closet.

3.30. SingTel supports the IDA's proposal in the Draft COPIF that the developer or owner should obtain the Fibre Readiness Certification by OpenNet Private Limited prior to the development obtaining its TOP.

SECTION 3: Location of Main Distribution Frame Room and Telecommunication Equipment Room

3.31. SingTel supports the IDA proposal in the Draft COPIF to locate the MDF rooms and TERs on the first storey (street-level) or on the second storey of the buildings, but not any higher. We also support the proposal for the developer or owner to bear the cost of any replacement of telecommunication equipment damaged caused as a result of flooding in the event the developer or owner insists on locating the MDF rooms for TERs at the basement levels of buildings.

3.32. SingTel submits that it is important that the Draft COPIF clarify that all MDF rooms, TERs and risers must have concrete flooring. This is to facilitate the mounting of equipment and ensure that the flooring is able to support the weight of the equipment and workmen.

SECTION 4 – Usage of Cable Trays/ Metal Trunking in Buildings

3.33. The Draft COPIF does not address the use of the common cable trays/ metal trunking in buildings by MTOs. SingTel submits that the MTOs should be allowed to utilise any common tray/ metal trunking within the building. Alternatively, the developer or owner should also provide a cable tray(s)/ metal trunking:

(a) in the common areas (e.g. public access areas, corridors, etc.); and
(b) in areas where there is a high ceiling of at least three (3) metres as it can be costly for the MTOs to install cable trays at such heights due to strict safety rules on the use of scaffolding and the lifting platform.

<u>Cable tray dimensions</u>

3.34. The Draft COPIF indicates that the minimum width of the cable tray is 200 mm [for a development consisting of one (1) or more multi-storey residential building of up to and including twenty-five (25) storeys where the telecommunication riser has a side wall depth of 450 mm].

3.35. SingTel submits that the minimum width of the cable tray should be extended to 300mm to allow for each of installation. The current trend is to use thicker cables of 15/8" to minimise cable loss due to distance – a width of only 200mm will present

difficulties for the last licensee to install its cable(s) in a cable tray. The Draft COPIF should be amended to provide for the minimum width of the cable tray to be 300mm.

Access to the relevant space and facilities where the developer or owner installs a false ceiling

3.36. SingTel submits that the example of facilities in section 7.14.2 also mention the feeder and antenna for clarity so as to avoid potential disputes as, depending on the mobile solution deployed in the development, there may be instances where the MTOs may install cable supports directly from the ceiling instead of cables:

"… the developer or owner shall, where it install a false ceiling obstructing or covering any access to the relevant space and facilities (e.g. cable trays, feeders and antennae), provide appropriate access…"

SECTION 5 - Sealing of underground pipes entering the Main Distribution Frame Rooms, Telecommunication Equipment Rooms and Telecommunication Risers

3.37. SingTel does not agree that only underground pipes leading to Enclosed Facilities must be sealed. All underground pipes entering the building in a horizontal manner must also be sealed to prevent potential damage to telecommunication plant and equipment due to flooding.

3.38. SingTel submits that for new developments, developers or owners should seal all underground pipes leading to Enclosed Facilities and/or entering the building in a horizontal manner prior to handing over the pipes to telecommunication licensees. Thereafter, the telecommunication licensees shall be responsible for re-sealing the underground pipes which they have used.

3.39. As underground pipes and the associated duct seals are part of the building infrastructure provided by the developer or owner, SingTel submits that for existing developments:

(a) the developer or owner shall be responsible to seal all underground pipes leading to Enclosed Facilities and/or entering the building in a horizontal manner; regardless of whether the underground pipes have been handed over to the telecommunication licensees;

(b) the developer or owner shall seal these underground pipes within two (2) years from the effective date of the revised COPIF (**Effective Date**). Upon completion of the sealing, the developer or owner shall submit a completion notification to telecommunication licensees through the TFCC together with photographs of the newly sealed pipes;

(c) the developer or owner shall only engage contractors certified with the Building Construction Authority **(BCA)** workhead ME10 or ME14 for the installation of the pipe seal. This is to ensure that the contractors engaged have the required knowledge on how to handle the existing cables in the pipes and not to damage these cables;

(d) thereafter, the telecommunication licensees shall be responsible for re-sealing the underground pipes after subsequent cable installation; and

(e) should the pipe seal need to be replaced due to aging of the pipe seal or poor sealing material/workmanship, the developer or owner shall be responsible for the replacement of the pipe seal regardless of whether they are used or unused.

3.40. SingTel submits there is merit for the Draft COPIF to standardise the sealing method i.e. Multi Cable Transit (**MCT**) seal system to avoid future maintenance problems. Accordingly, SingTel requests that the IDA prescribe the MCT seal system as the sealing solution to be adopted in the Draft COPIF.

SECTION 7: Provision of electrical distribution panels and accessories in the relevant space and facilities

3.41. Operationally, SingTel submits that it is unlikely that the developer or owner and telecommunication licensees can reach an agreement on the utility charges to be borne by the telecommunication licensees for the installation, plant or system used to provide telecommunication services to the development.

3.42. As the electrical facilities form part of the infrastructure of the development, the cost of such electrical installations should be borne by the developer or owner. In the event that the developer or owner requires a telecommunication licensee to bear the utility charges for the installation, plant or system used to provide telecommunication services to the development, the developer or owner should be responsible for providing and installing the necessary electrical installation e.g. distribution panels, cabling, separate utility meter and other accessories. Thereafter, the telecommunication licensee will be responsible for paying the utility charges "as incurred" directly to the utility provider. SingTel believes this to be a more reasonable

and equitable approach. This is also consistent with the current approach established between HDB and telecommunication licensees.

3.43. For the avoidance of doubt, the utility meter to be installed by developer or owner for the telecommunication licensee should not be connected to the lighting and ventilation to be provided in the relevant space and facilities since these should be provided by the developer or owner at its own expense.

3.44. Notwithstanding that the previous COPIF will be cancelled upon the Draft COPIF becoming effective, SingTel also requests that the IDA clarify in the Draft COPIF that, notwithstanding the provisions in section 2.3 of the Draft COPIF, the developer or owner may not seek reimbursement from telecommunication licensee for any utility charges incurred prior to effective date of the new COPIF.

SECTION 8 – Other Proposed Changes

Use of space and facilities to serve beyond the boundaries of a development

3.45. SingTel welcomes the IDA's attempt to set out clearly, in the Draft COPIF, the processes and broad principles for the use of space and facilities provided within a development (**COPIF space and facilities**) to serve areas and/or properties outside of the development (**external properties**).

3.46. To provide more clarity to telecommunication licensees, SingTel requests the IDA to include in the Draft COPIF further guidance in relation to the use of the COPIF space and facilities to serve external properties as long as priority is accorded to meet the requirement of the development.

3.47. SingTel also requests the IDA's confirmation that the processes and broad principles specified in the Draft COPIF will only apply to additional use of COPIF space and facilities to serve external properties from the effective date of the new COPIF i.e. any existing use of COPIF space and facilities to serve external properties as at the effective date of the new COPIF shall remain unaffected. i.e. where telecommunication licensees are using COPIF space and facilities to serve external properties as at the effective date, the telecommunications licensees have a right to continue to do so pursuant to the new COPIF.

3.48. As the IDA would appreciate, telecommunication licensees' existing telecommunication network and infrastructure are already commissioned with live services and customer circuits. It will be costly and result in service disruption if telecommunications licensees were required to migrate these services and circuits to alternative infrastructure (if feasible to do so). Such migration will result in extensive service interruptions island-wide. For customers subscribing to multiple telecommunication licensees, the impact will be compounded since they will be affected by migration activities undertaken by various telecommunication licensees. Hence, it is only prudent that any existing use of COPIF space and facilities used to serve external properties as at the effective date of the new COPIF shall remain as is.

3.49. In terms of providing further guidance, we request that the IDA clarify certain circumstances (without limitation) where the use of COPIF space and facilities to external properties would be contemplated such as:

(a) where there are no alternatives to serve external properties e.g. the external property is a Landed property or has no MDF room or the MDF room is fully utilised;
(b) for the deployment of a typical telecommunications ring topology network architecture where it is necessary to designate some of the COPIF space and facilities as hubs so as to ensure path diversity and resiliency; and
(c) where is it more practical or efficient to concentrate the telecommunication lines in a single active equipment platform housed within the hubs.

3.50. In relation to the MDS, SingTel request the IDA’s confirmation that the MTOs need only notify the developer or owner if the primary use of the MDS is to serve external properties. Where the MDS is primarily used to serve the development but also serves external properties, there is no need for the MTOs to inform the developer or owner.

3.51. SingTel also requests the IDA’s confirmation that the notification process will only apply to new installations from the effective date of the new COPIF.

3.52. For administrative and practical purposes, the licensee should only be required to retain proof of notification to developer or owner for a period of no more than seven (7) years.

Additional costs incurred by developer or owner to grant access to licensees for activities relating to the provision of coverage to external properties

3.53. The Draft COPIF makes a provision for the developer or owner to recover "additional costs [incurred] in granting access to the licensee" for the purpose of deploying equipment to serve external properties.

3.54. SingTel submits that this provision is ambiguous and presents a potential loophole for a developer or owner to impose unnecessary charges on the licensee(s) for providing mobile coverage to external properties. The IDA should provide specific examples of what this actually means in practice. Where such a charge is imposed and the parties disagree on whether it is reasonable, the licensees will attempt to negotiate with the developer or owner in good faith. However, should the parties not be able to come to an agreement on whether the charge should be imposed, SingTel recommends that the matter be raised to the IDA under a dispute process. Where the developer or owner does not allow the licensee(s) disputing the charge(s) access to or use of the MDS, the licensee(s) should be waived from complying with any quality of service (**QOS**) requirements for that development and/or external properties served from the MDS in that development until the dispute is satisfactorily resolved.

3.55. SingTel also seeks the IDA's clarification that the "additional cost" will only apply to the first instance where the cost is incurred in granting access for the MTOs to install equipment in the building MDS. Continued access to the MDS for maintenance [or similar] activities should not be subject to subsequent or repeated recovery of the "additional cost".

Access to the relevant space and facilities

3.56. In relation to the requirement in the Draft COPIF that the developer or owner provide appropriate access panels or openings (i.e. measuring at least 600mm x 600mm for workman access) at regular intervals of 6m and at locations where there is a change in the direction of the relevant facilities, SingTel request the IDA's confirmation that this will also apply to existing developments with concealed facilities.

3.57. For the provision of cable trays for telecommunication licensees by the developer or owner, in the event that tiered cable trays are required for various services e.g. utility, telecommunication, the bottom-most cable tray should be assigned to

telecommunication licensees. Further, cable trays should have at least 300mm clearance between each tier of cable trays.

3.58. MDF rooms should be limited to a single storey. If MDF rooms have to be located on multiple levels, prior approval from TFCC is required. Proper access stairways with proper railings (not ladders) should be provided to access the MDF room if such cases are approved by TFCC.

3.59. For safety reasons, the relevant facilities should be located at a height of no more than 3.3m instead of 4m as currently proposed in the Draft COPIF. The basis for arriving at the height of 3.3m is as follows:

(a) the Workplace Safety and Health Council considers falls of 2m or more as potentially fatal;
(b) a typical workman's height is assumed to be 1.5m; and
(c) a typical ladder deployed on site is 1.8m high.

3.60. Based on the above, SingTel submits that the maximum height a workman is able to access a facility safely is 3.3m.

Responsibility for sealing of inter-floor openings

3.61. SingTel have encountered cases whereby the risers do not have any flooring for three (3) consecutive levels. Such cases pose a significant danger to workmen who are required to carry out work in the risers. It also poses a hazard to the public (e.g. children may gain access to the risers and fall through the riser opening). SingTel submits that the Draft COPIF include the following additions:

(a) the inter-floor opening should not be bigger than 1.25 times the width of the cable tray with a depth of not more than 200mm. The remaining floor area in the riser should be covered with reinforced concrete; and
(b) to construct a kerb with a height of 300mm and thickness of 50mm to surround the floor opening for the cable tray.

3.62. There are increasing cases where the developer or owner has sealed the riser with fibre stop material prior to the installation of telecommunication cables in the building. This has impeded telecommunication licensees from undertaking cabling work in the building and has resulted in unnecessary wastage of resources to break

and re-seal the fire stop material. Such occurrences can be easily prevented if the developer or owner ensures that the telecommunication cables are installed before sealing the riser with the fire stop material; prior to applying for building TOP.

3.63. SingTel submits that if the developer or owner seals the riser with the fire stop material before telecommunications licensee(s) has installed their cable(s), the developer or owner should be responsible to re-open and re-seal the riser with the fire stop material after the cabling work is completed.

OTHER COMMENTS ON DRAFT COPIF

Draft COPIF 2.5.5 - Continuing obligation to provide access to and use of the relevant space and facilities

3.64. In addition to clause 2.5.5 in the Draft COPIF, the developer or owner should not impose any deposit on the telecommunication licensee in connection with the grant of access to and use of the space and facilities provided.

Charge(s) for security and safety measures required by the relevant authorities or under any relevant laws or regulations

3.65. The Draft COPIF states that the developer or owner may impose a "charge reasonably incurred for security and safety measures which are required by any relevant authority or under any relevant laws and regulations".

3.66. SingTel submits that this exception is vague and presents a potential loophole for the developer or owner to impose "security and safety" charges on the licensees. SingTel suggests that the IDA, in consultation with the licensees, provide a definition and/or specific examples of what this actually means in practice.

3.67. Where such a charge is imposed and the parties disagree on whether it is reasonable, the licensees will attempt to negotiate with the developer or owner in good faith. However, should the parties not be able to reach agreement on whether the charge should be imposed and if so, the quantum of the charge, SingTel recommends that the matter be raised to the IDA under a dispute process. Where the developer or owner does not allow the licensee(s) disputing the charge(s) to access and/or use the relevant space and facilities, the IDA should waive the requirement for licensee(s) to comply

with the quality of service (**QOS**) requirements for that development until the dispute is satisfactorily resolved.

3.68. SingTel also seeks the IDA's confirmation that the security escort charge [and similar security escort charges imposed by a third party at the behest of developers, owners, or HDB town councils etc] should no longer be borne by the licensees under the Draft COPIF including:

(a) the security escort charge that MTOs currently bear to access equipment on the rooftops of Housing Development Board (**HDB**) buildings as required by the town councils; and
(b) the police escort charge required by the Changi Airport Group in order for MTOs to access restricted areas in addition to requiring that the MTOs' representative be present at all times and carry a valid airport pass which is chargeable and issued by the airport police for periods of one (1) or three (3) years.

Draft COPIF 3.2.1(f), 3.2.3 – Submission of plans to TFCC

3.69. SingTel notes that no time frame was specified in the Draft COPIF for the developer or owner to submit its plans to TFCC.

3.70. SingTel submits that the developer or owner should provide an accurate TOP date at the point of TFCC submission and to notify the TFCC should there be a change of TOP schedule. This notification should be provided no less than six (6) months before the revised TOP date.

3.71. In the covering letter to the TFCC, the developer or owner should clearly indicate any deviation from the COPIF.

3.72. SingTel also requests that the Draft COPIF include a provision for the developer or owner to inform the MTOs at least nine (9) months prior to the TOP date should mobile coverage be required upon TOP. The MDS should be fully equipped with the necessary infrastructure and power supply for the MTOs to install our equipment prior to the TOP.

Draft COPIF 4.2 – Provision of lead-in pipes and underground pipes

3.73. Telecommunication cables and distribution points (**DP**) are typically located on the lowest tier of the compartment of the gate pillar. This makes the infrastructure susceptible to damage and shorter lifespan due to water build up during the rainy season. Furthermore, access is restricted at the lowest tier making maintenance a challenge. SingTel submits that the gate pillar should be divided vertically for telecommunication, water and electrical services respectively instead of horizontally as it is currently.

Draft COPIF 5.2, 6.2, 7.2, 8.2, – Provision of main distribution frame room

3.74. SingTel submits that the following should be include in accordance with the Fire Act:

(a) the developer or owner should provision a suitable fire extinguisher within the MDF room;
(b) the developer or owner should indicate on the MDF room floor, 1200mm from the door, to demarcate a zone whereby no equipment can/ should be located;
(c) any floor opening in the MDF room (to facilitate cable pulling) should not be wider than 1.25 times the width of the cable tray and have a depth of not more than 200mm; and
(d) to include a kerb of height 300mm and thickness 50mm to surround the floor opening for the cable tray.

Draft COPIF 10.3 - General requirement for all pipes

3.75. As subsequent connection of pipeline will be challenging after TOP therefore SingTel submits that the lead-in pipes to be allocated to various authorised licensees should be determined by IDA for each development to ensure that all licensees are fully aware of their allocated pipe to be connected before TOP.

Draft COPIF 10.4.1a - Specific requirements for lead-in pipes

3.76. The roadside drains constructed by the Public Utilities Board (**PUB**) or the developer or owner at the perimeter of new or re-constructed developments are getting deeper. This poses a challenge to telecommunication licensee to deploy and maintain their infrastructure.

3.77. SingTel submits that the Draft COPIF be amended as follows:

(a) For a depth of the roadside drain of less than 2m, the developer or owner should construct the lead-in pipes to under-cross the roadside drain;
(b) For a depth of the road side drain of more than 2m, the developer or owner should over-cross the roadside drain subject to the approval of the PUB. The developer or owner shall provide the necessary undertaking to PUB. For such cases of over-crossing of roadside drains, telecommunication licensees should be relieved from providing the undertaking to PUB for future plant diversions.

Draft COPIF 5.2.7(b), 6.2.7(b), 7.2.7(b) - On the provision of electrical distribution panel for main distribution frame room

3.78. For the two (2) spare 20A miniature circuit breakers, one (1) is to be exclusively used for the telecommunication licensee(s) to connect its DC power chargers with a separate 30mA earth leakage circuit breaker and a 20A isolator switch. This is to prevent unnecessary power trip (caused by the shared facilities) which will affect the AC supply to the telecommunication licensee's DC power chargers resulting in service interruption. SingTel submits that the Draft COPIF be amended to include the provision of a minimum of one (1) 20A isolator switch in developments where the total number of residential units is 30 or below.

3.79. Accordingly, SingTel submits that Tables 5.2.8, 6.2.8, 7.2.8 in the Draft COPIF should be amended as follows:

Total number of residential units in development	**Minimum number of switch socket outlets to be provided in main distribution frame room**	**Minimum number of isolators to be provided in main distribution frame room**
30 or below	3 x single- 15A 3 x twin- 13A	~~Not Applicable~~ [To insert] **1 x 20A**

DRAFT GUIDELINES FOR INFO-COMMUNICATION FACILITIES IN BUILDINGS

3.80. On 8 March 2012 SingTel provided its comments on Chapter 4 of the existing guidelines, specifically:

"… 3-ph, 30 A is sufficient for 2G/3G however 3-ph, 60 A is required for [4G] and in the event that the MTOs are required to power the air-conditioning in the equipment room. If the developer or owner provides the air-conditioning then we will require 3-ph, 40A which also factors in [4G]. SingTel recommends that the Guidelines indicate sufficient power to support [4G]."

3.81. SingTel notes that the IDA has not included our proposal in the Draft Guidelines or addressed the MTOs' need for a greater power supply to support 4G equipment. Furthermore, and without prejudice to our comments in Section 1, the Draft COPIF states that the developer or owner need not provide ventilation to the MDS therefore the MTOs are expected to supply our own ventilation. Without a sufficient power supply, the MTOs will not be able to power the air-conditioning required for the MDS.

3.82. SingTel requests that the IDA amend the guidelines in relation to the power supply requirements for the MDS such that:

(a) New buildings should provide a power supply of at least 32A, 3-phase at the MDS.
(b) Existing buildings should:

i. allow the MTOs to tap the power supply from the bar where the building has sufficient power; else
ii. the developer or owner should provide a power supply of at least 32A, 3-phase at the MDS.