

EXPLANATORY MEMORANDUM

1. This Explanatory Memorandum explains the Direction dated 4 January 2013, issued by the Info-communications Development Authority of Singapore (“**IDA**”) to OpenNet Pte Ltd (“**OpenNet**”), directing it to incorporate modifications to its proposed Schedule 12C (Co-Location Space & Service in New Co-Location Room) (“**Schedule 12C**”) to its Interconnection Offer (“**ICO**”) to offer Co-Location Space and Services at the Central Offices to the Requesting Licensees, and to make consequential changes to Schedule 18 (Dictionary) to its ICO.
2. Unless the context requires otherwise or unless specifically defined herein, all capitalised terms used in this Explanatory Memorandum shall have the same meanings as in OpenNet’s ICO for the provision of services over the Next Generation Nationwide Broadband Network (“**Next Gen NBN**”).

Background

3. Under OpenNet’s existing ICO, among others, OpenNet provides Co-Location Space of up to 120 square metres per Central Office. As the current Co-Location Space at several of OpenNet’s Central Offices is fully utilised or near full utilisation, new Co-Location Space is needed. OpenNet has submitted a proposed set of terms and conditions, to offer additional Co-Location Space at the Central Offices (i.e. Schedule 12C (Co-Location Space & Service in New Co-Location Room) (“**Schedule 12C**”)), for IDA’s review and approval. OpenNet has also provided the associated changes to Schedule 18 (Dictionary) for IDA’s review and approval.
4. To ensure that OpenNet’s proposed changes to the ICO are appropriate and adequate to address the concerns and needs of the industry, IDA sought feedback from the industry via a public consultation which commenced on 30 October 2012. At the close of the consultation on 20 November 2012, IDA received comments from four (4) respondents (namely, M1 Limited, Nucleus Connect Pte Ltd, Singapore Telecommunications Limited and StarHub Ltd). IDA thanks the respondents for their comments.
5. With regard to OpenNet’s proposed charges for Schedule 12C to the ICO, IDA is currently reviewing the new charges proposed by OpenNet and will inform the industry of the outcome of the review at a later date.

SUMMARY OF COMMENTS RECEIVED AND IDA’S DECISIONS

Section 1 – OpenNet’s Allocation Of Co-Location Space

6. In its proposed Schedule 12C, OpenNet had proposed that in the event more than 50% of the available Co-Location Space has been allocated for the use by Requesting Licensees (“**RLs**”), OpenNet would be entitled to take back any unused Co-Location Space allocated to an RL and terminate the licence of such Co-Location Space, by giving the RL a notice of not less than ten (10)

Business Days. In addition, where more than 50% of the available Co-Location Space has been allocated for use by an RL, OpenNet would be entitled to request more information from the RL before it decided on the allocation of any additional Co-Location Space.

Industry's Submission

7. IDA received the following comments from the respondents on OpenNet's proposal:

- (a) OpenNet's proposal to unilaterally take back Co-Location Space that has already been provisioned to an RL contravenes OpenNet's obligations to offer Mandated Services pursuant to the NetCo Interconnection Code. OpenNet should also not restrict supply of Co-Location Space in the ICO to an RL and at the same time offer no alternative to the RL.

In the event that OpenNet's proposal is adopted:

- (b) Where OpenNet does not fulfil an RL's request, OpenNet should allow the RL to justify its request, and the parties shall refer the matter to IDA for resolution if the parties cannot reach an agreement.
- (c) Co-Location Space used to house FDF racks should not be taken back by OpenNet. The thirty (30) Business Days timeframe for the RL to activate its active equipment is insufficient as the RL needs to cater for capacity planning and demand at least six (6) months in advance.
- (d) Where OpenNet takes back unused Co-Location Space, OpenNet shall not charge the RL for early termination and shall further compensate the affected RL for the cost incurred in acquiring that Co-Location Space and for the removal of its equipment.
- (e) OpenNet is to specify the type of information it requires the RL to furnish for OpenNet to determine whether it will allocate more space to the RL to ensure a more transparent and efficient process for space allocation and minimise any unnecessary delay.

IDA's Assessment

8. IDA notes that OpenNet's proposed measures are not consistent with OpenNet's obligations to offer Mandated Services pursuant to the NetCo Interconnection Code. Section 2.7 of the NetCo Interconnection Code states that "*The Licensee [OpenNet] may not unreasonably restrict the manner in which a Qualifying Person may utilise Mandated Services*". IDA further notes that in OpenNet's proposal to unilaterally take back Co-Location Space that has already been provisioned to an RL, OpenNet has not provided the RL an opportunity for the RL to justify why the Co-Location Space is needed. Additionally, IDA also notes that the proposed timeframe of thirty (30) Business Days where no active equipment has been activated is not

reasonable as RLs may need time to prepare their capacity in advance of demand.

9. IDA is also of the view that OpenNet's proposal to simply terminate the licence of any Co-Location Space that has already been acquired and paid for by an RL on the grounds of space limitation is unreasonable. OpenNet is reminded of its obligation under Section 2.5 of the NetCo Interconnection Code which states that "*Where the Licensee [OpenNet] cannot offer Co-Location Services due to space limitations or for any other legitimate reason, the Licensee [OpenNet] shall take reasonable measures to find an alternative solution*". In this regard, it is unreasonable for OpenNet to view service denial to any RL for Co-Location Space as an alternative solution. Instead, the onus is on OpenNet to find an alternative solution in the event of space limitations such that it can continue to provide Co-Location Service to its RLs. Further, OpenNet has not provided any evidence that RLs would accumulate unused Co-Location Space for no good reason. For example, IDA notes that some RLs may obtain Co-Location Space in advance to prepare for their capacity to meet future demand. While IDA will continue to monitor this, IDA is of the view that, considering that RLs would have to pay charges to OpenNet for the Co-Location Space, it is likely that RLs would be incentivised to use the Co-Location Space obtained from OpenNet efficiently.
10. Taking everything into consideration, IDA agrees with the industry that OpenNet is to remove the proposed constraints on the provision of the Co-Location Space. It is OpenNet's responsibility to undertake the necessary resource planning (in terms of Co-Location Space) in advance so as to ensure that Co-Location Space is available to meet industry demand. Where Co-Location Space is unavailable, OpenNet must provide an alternative solution in accordance with Section 2.5 of the NetCo Interconnection Code.
11. In addition to the above, IDA also requires OpenNet to provide its detailed plans and schedule to IDA, for its alternative solution for the provisioning of subsequent Co-Location Space once the level of utilisation of the new Co-Location Space in OpenNet's Central Offices reaches 70%, except for the Orchard Central Office, where its said detailed plan and schedule shall be provided to IDA when the level of utilisation reaches 50% in view of the floor loading limitation.

Section 2 – Co-Location Service Request Quota

12. OpenNet had proposed a cumulative maximum of sixteen (16) Co-Location Requests (inclusive of Co-Location Modification Requests) per week from all Requesting Licensees ("Co-Location Service Request Quota") for both Schedule 12 (Co-Location Service) and Schedule 12C (Co-Location Space & Service in New Co-Location Room).

Industry's Submission

13. An industry respondent commented that the Co-Location Service Request Quota is insufficient and should be increased to at least thirty-two (32) Co-Location Requests per week.

IDA's Assessment

14. IDA understands that the quota of sixteen (16) Co-Location Requests is able to meet the general demand of the RLs. Nonetheless, IDA anticipates that the Co-Location Requests may increase during the initial implementation of Schedule 12C as the current Co-Location Space at several of OpenNet's Central Offices is fully utilised or is near full utilisation. While IDA will not require OpenNet to revise the quota at present, IDA reserves the right to direct OpenNet to do so as an exception, if justified, and also expects OpenNet to exercise flexibility during the initial implementation of the Co-Location Service Request Quota, such that the RLs' requests and needs are adequately met.

Section 3 – Heat Load Per Rack In OpenNet's New Co-location Room

15. In its proposed Schedule 12C, OpenNet had proposed that the maximum heat load for each rack shall not exceed 3kW.

Industry's Submission

16. IDA received the following comments from the respondents on OpenNet's proposal:
 - (a) The proposed 3kW heat load limit per rack is not future proof as there are developments for higher power density equipment which may require higher heat load.
 - (b) In order to cater for future technology, a higher heat load of up to 6kW may be required.

IDA's Assessment

17. IDA agrees with the industry that OpenNet's proposed 3kW heat load limit per rack may not be sufficient to meet future technology growth. Nevertheless, IDA notes that generally, the actual heat load per rack in OpenNet's Central Offices currently does not exceed 3kW. It is therefore unlikely for RLs to exceed this heat load limit at the onset. IDA also notes that requiring OpenNet to offer a higher heat load limit per rack will require OpenNet to provide a higher cooling capacity for the Co-Location Space and this may result in more resources being incurred where there is no current need to do so. Given that the heat load limit of 3kW per rack is able to meet most RLs' needs, IDA will not presently require OpenNet to increase the heat load limit. However, in

order to cater for future technology growth or meet any particular RL's unique requirements, OpenNet shall negotiate in good faith a Customised Agreement with any RL who requires a higher heat load limit in accordance with the procedures as specified in Section 6 of the NetCo Interconnection Code. Further, IDA will continue to monitor the situation and in the event the heat load limit of 3kW is no longer sufficient to meet most equipment specifications or RLs' needs, IDA reserves the right to require OpenNet to adjust this heat load limit accordingly.

Section 4 – Power/DC Power Rectifier

18. In its proposed Schedule 12C, OpenNet had proposed that an RL shall not use the power designated for a rack for another rack. In addition, OpenNet did not propose to offer 3-phase AC power. IDA further understands that OpenNet is proposing not to allow an RL to install its own DC power rectifier and will require the RL to purchase DC power from OpenNet in the new Co-Location Room.

Industry's Submission

19. IDA received the following comments from the respondents on OpenNet's proposal:
 - (a) OpenNet's proposal to offer only 16amp circuit breaker for AC power prohibits an RL from installing its own DC power rectifier and compels an RL to purchase DC power from OpenNet in the new Co-Location Space.
 - (b) As it is common for RLs to require 3-phase power for their DC power rectifiers, OpenNet should be required to include such a provision in its Schedule 12C.
 - (c) OpenNet is to offer RLs the choice of providing and managing their own power supply. OpenNet should base its charges on actual consumption rather than on circuit breaker capacity which does not reflect the actual consumption.

IDA's Assessment

20. IDA notes that DC power supply is a crucial service. Notwithstanding that OpenNet does not currently provide a Service Level Guarantee for its DC power supply, it has proposed that RLs are required to purchase DC power only from OpenNet for the new Co-Location Space. IDA notes that in order for the RL to deploy its own DC rectifier, OpenNet has to offer 3-phase AC power to the RL and this is currently allowed under a Customised Agreement for the current Co-Location Space. IDA further notes that there are RLs who may opt to procure DC power from OpenNet in view of their less stringent power requirement for their Co-Location Equipment. In this regard, at present IDA will not require OpenNet to offer 3-phase AC power supply in the ICO for an

RL who chooses to deploy its own DC power rectifier in the Co-Location Space given that not all RLs would need to install their own DC power rectifiers. Instead, OpenNet shall negotiate in good faith a Customised Agreement with any RL for the provisioning of 3-phase AC power for the purpose of deploying its own DC power rectifier in the Co-Location Space in accordance with the procedures as specified in Section 6 of the NetCo Interconnection Code. Further, IDA will continue to monitor the situation and reserves the right to require further changes to be made to the above arrangement where appropriate.

21. With regard to OpenNet's concern that the Co-Location Space may not be efficiently utilised if RLs are allowed to deploy their own DC rectifiers where they can obtain DC power from OpenNet, IDA is of the view that such concern could be largely ameliorated as it is open to OpenNet to improve its offer of its DC power supply and give further assurance to its RLs on its reliability to encourage RLs to use the DC power supplied by OpenNet. OpenNet should not prevent RLs from installing their own DC power rectifiers for the only reason of possible space constraint. IDA reiterates that under Section 2.5 of the NetCo Interconnection Code, where OpenNet cannot offer Co-location Service due to space limitations or for any other legitimate reason, OpenNet shall "*take reasonable measures to find an alternative solution*". In this regard, the onus is on OpenNet to find alternative solutions in the event that OpenNet faces space limitations in its current Central Offices.
22. With regard to OpenNet's charging mechanism for power, IDA will review this together with OpenNet's proposed charges for Schedule 12C separately.

Section 5 – Physical Access To Co-Location Space

23. In its proposed Schedule 12C, OpenNet had proposed that an RL must submit a physical access request in order to obtain physical access to the Co-Location Space and a maximum of four (4) persons would be allowed to access the Co-Location Space.

Industry's Submission

24. IDA received the following comments from the respondents on OpenNet's proposal:
 - (a) OpenNet must clearly state that RLs are allowed to access the Co-location Space provided under Schedule 12 and Schedule 12C via a single Physical Access Request as it is inefficient for an RL to raise separate Physical Access Requests for each service schedule, and pay additional access charges.
 - (b) OpenNet should increase the number of persons accessing the Co-location Space to eight (8). The limit of four (4) persons is unreasonable and results in an RL having to submit two (2) applications with two (2) access charges.

IDA's Assessment

25. IDA notes that an RL may need to access different Co-Location Spaces (obtained under Schedule 12 and Schedule 12C) within the same Central Office. To illustrate, an RL may need to do so when troubleshooting any faults and the RL may only realise that it needs to access both Co-Location Spaces when it is on site. As such, it is unreasonable to require an RL to have to submit another Physical Access Request to OpenNet if the RL has only applied to access a particular Co-Location Space in its earlier submission. IDA agrees that RLs should not be required to submit two (2) separate Physical Access Requests to access the Co-Location Spaces (obtained under Schedule 12 and Schedule 12C) in the same Central Office at any one time as it creates unnecessary administrative hassle.
26. With regard to the number of persons accessing the Co-Location Space, IDA is of the view that the current limit of four (4) persons is reasonable and should be retained as it may be a challenge for the escort to monitor the movement of more than four (4) persons at any one point in time. However, OpenNet should allow the RLs' authorised personnel to have the ability to move from one Co-location Space to another Co-Location Space (obtained under Schedule 12 and Schedule 12C) once the application has been approved. The RLs should also be allowed to access both Co-Location Spaces (obtained under Schedule 12 and Schedule 12C) concurrently if necessary without having to apply for an additional Physical Access Request or paying for additional escort charges. As for OpenNet's concern of RLs interfering with other RLs' equipment since OpenNet's escort cannot be at both locations concurrently, IDA understands that OpenNet has already installed CCTV system in its Co-Location Space to monitor such errant behaviour, if any, in the Co-Location Space. Nevertheless, IDA has no objection to OpenNet putting in additional escorts or requiring its escort to monitor both locations closely but any such action taken by OpenNet should not unduly delay or restrict the RL from accessing the Co-Location Spaces and any *additional* cost in relation to such escorts should not be passed on to the RLs.
27. In summary, OpenNet is to only require an RL to submit one (1) Physical Access Request for the Co-Location Spaces (obtained under Schedule 12 and Schedule 12C) as long as they are in the same Central Office.

Section 6 – Ambient Temperature

28. In its proposed Schedule 12C, OpenNet had not proposed the ambient temperature in its Co-Location Space.

Industry's Submission

29. An industry respondent expressed the view that Schedule 12C was unclear about the actual cooling system that OpenNet is providing. The respondent also raised its concerns on the ambient temperature in OpenNet's Co-Location Space.

IDA's Assessment

30. IDA notes that it is industry best practice to provide an ambient temperature in the Co-Location Space. OpenNet is therefore required to state the ambient temperature in its Co-Location Space and it must be based on an industry best practice. In addition, OpenNet is to clearly state the obligations and arrangements between OpenNet and its RLs in the event that the actual ambient temperature in the Co-Location Space is higher than the defined ambient temperature. In all cases, OpenNet shall be fully responsible to ensure that the ambient temperature is maintained at the defined level if none of the RLs' racks exceeds the 3kW heat load limit per rack.