

SCHEDULE 4C
IRS TAIL CIRCUIT SERVICE

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SCHEDULE 4C

IRS TAIL CIRCUIT SERVICE

1. SCOPE

1.1 This Schedule 4C sets out the terms and conditions under which SingTel will provide the Requesting Licensee with Tail Circuits as an Interconnection Related Service (**IRS Tail Circuit Service**). The IRS Tail Circuit Service enables the Requesting Licensee to establish a connection for the carriage of digital communications between one or more End User sites and the Requesting Licensee's Co-Located Equipment at the SingTel Exchange Building nearest to and serving the relevant End User site. Notwithstanding anything in this Schedule, the Requesting Licensee may:

- (a) use the IRS Tail Circuit Service as an input for the provision of any telecommunication product or service for its private internal use, and/or
- (b) acquire the IRS Tail Circuit Service as inputs to the provision of any telecommunication product or service to its affiliates,

where the Requesting Licensee offers or intends to offer that kind of telecommunication product or service (whether or not using the same IRS Tail Circuit Service) to non-affiliated third party ~~e~~Customers/**End Users**. For this purpose, any reference in this Schedule to the term ~~Customer~~/**End User** shall, where appropriate, also refer to the Requesting Licensee or its affiliates.

For the avoidance of doubt, SingTel is not required to provide the Requesting Licensee with a licence to use the IRS Tail Circuit Service for the provision of any telecommunication product or service to itself [the Requesting Licensee] if the Requesting Licensee does not intend to offer that kind of telecommunications product or service to non-affiliated third party customers.

IDA Directed Amendments: Pursuant to the Minister's 25 January 2007 Decision, a Requesting Licensee may use a Local Loop or Sub Loop as an input for the provision of any telecommunication product or service for its private internal use, and/or acquire the Local Loop or Sub Loop as input for the provision of any telecommunication product or service to its affiliates, if the Requesting Licensee offers or intends to offer that kind of telecommunication product or service to non-affiliated third party Customers or End Users. SingTel's Proposed RIO Modifications to this Schedule 4C do

not give full effect to the Minister's 25 January 2007 Decision. Accordingly, IDA directs SingTel to revise this Clause 1.1 in the manner as specified above.

- 1.2 The IRS Tail Circuit Service is a dedicated end-to-end digital transmission service connecting:
 - (a) the End User's site; and
 - (b) the Requesting Licensee's Co-Located equipment at the SingTel Exchange Building nearest to and serving the End User's site.
- 1.3 The provision of Co-Location Space and physical access thereto at Co-Location Sites for the purposes of being supplied with the IRS Tail Circuit Service must be acquired by the Requesting Licensee in accordance with Schedule 8B.
- 1.4 For the avoidance of doubt, the end link for the End User's site for the IRS Tail Circuit Service shall not terminate at any premise that is not used for the purpose set out in clauses 1.1 to 1.3 including the sites specified in Annex 4C-2 (**Excluded Sites**). The IRS Tail Circuit Service will not be provided in respect of any Excluded Sites. Any revision to the list of Excluded Sites specified in Annex 4C-2 shall not be effective unless prior approved by the Authority.
- 1.5 The IRS Tail Circuit Service will not be provided between two (2) FBO sites or two (2) End User sites.
- 1.6 The derivation of Zone (Central or Non-Central) is set out in Annex 4C-7.
- 1.7 The IRS Tail Circuit Service is available at the bandwidths options set out in Annex 4C-1.
- 1.8 Where the Requesting Licensee requires SingTel to handover a IRS Tail Circuit Service of bandwidth between 64 kbps and 1984 kbps using the G.703 interface standard, SingTel must also offer grooming. For the avoidance of doubt, in each instance where the Requesting Licensee requires SingTel to perform grooming, SingTel need only groom the relevant circuits up to a maximum bandwidth of 1984 kbps.
- 1.9 The technical means of delivery (including routing) of the IRS Tail Circuit Service shall be at the sole discretion of SingTel, provided that the routing configuration shall be no less favourable than the routing which SingTel provides to itself, its affiliates and Customers.

- 1.10 This Schedule only applies to the Requesting Licensee if it is an FBO.
- 1.11 (a) The timeframes in this Schedule relating to IRS Tail Circuit Service activation specified in clause 2.4 and 3.1 are subject to delays caused by events outside SingTel's reasonable control, in which case such failure to meet the timeframes shall not constitute a breach of this RIO Agreement and clause 1.12(a) shall not apply, provided that SingTel must notify the Requesting Licensee as soon as practicable upon the occurrence of such events, stating the cause of the events and specifying a new service activation date by extending the relevant timeframes for a period equal to the period of such delays.
- (b) For the purpose of sub-clause (a) above, in the event that SingTel is unable to activate service in relation to an Tail Circuit Activation Request (TCAR) received under this Schedule 4C within the timeframe specified in clause 2.4 and 3.1, and such failure is caused by the cumulative number of TCARs received from all Requesting Licensees exceeding the resources that SingTel has committed to processing the TCARs, such event shall not be considered outside of SingTel's reasonable control, unless SingTel can satisfy the Authority of the following:
- (i) the anticipated cumulative number of TCARs that SingTel expects to receive from all Requesting Licensees is reasonable in the circumstances; and
- (ii) SingTel has committed sufficient resources to process such anticipated cumulative number of TCARs.
- (c) For the avoidance of doubt and subject to clause 1.4, SingTel must complete the IRS Tail Circuit Service activation by the new service activation date notified to the Requesting Licensee and clause 1.12(a) shall apply to such new service activation date.
- 1.12 (a) If SingTel fails to meet any timeframes in this Schedule relating to application processing, installation work or maintenance work to be undertaken by SingTel in relation to the IRS Tail Circuit Service, and the failure to meet the timeframe is caused by events within SingTel's reasonable control, SingTel will provide a remedy to the Requesting Licensee in accordance with:
- (i) section 2 of the Annexure 4C-5 and any terms and conditions contained therein in respect of application processing or installation work;

- (ii) section 3 of Annexure 4C-5 and any terms and conditions contained therein in respect of maintenance work; and
- (iii) section 4 of Annexure 4C-5 in respect of claims made under Annexure 4C-5.

(b) The Requesting Licensee acknowledges that this remedy is a genuine pre-estimate of the Requesting Licensee's loss and will be the sole and exclusive remedy available to the Requesting Licensee for such failure to meet provisioning timeframes and shall be SingTel's sole and exclusive liability to the Requesting Licensee for such failure.

- 1.13 The Requesting Licensee shall be responsible for all the relevant Charges specified in Schedule 9 for the IRS Tail Circuit Service provided under this Schedule 4C.

2. ORDERING AND PROVISIONING PROCEDURE

- 2.1 The Requesting Licensee shall submit a request for the IRS Tail Circuit Service activation in the form of a TCAR provided in Annex 4C-3.

- 2.2 In accordance with Schedule 8B, the IRS Tail Circuit Service Co-location Tie Cable pair must be provisioned prior to the Requesting Licensee submitting the TCAR.

- 2.3 In the case of regular provisioning, the Requesting Licensee must submit the TCAR to SingTel no less than 15 Business Days prior to the requested date of activation for the IRS Tail Circuit Service. The date of receipt of the TCAR by SingTel is the **Application Date**.

- 2.4 Following receipt by SingTel of the TCAR, SingTel shall, by 5pm on the following Business Day, acknowledge receipt of the TCAR and notify the Requesting Licensee of its initial acceptance or rejection of the TCAR (**Initial Decision**). Where the Initial Decision is to reject the TCAR, SingTel will provide to the Requesting Licensee the reason or reasons for this rejection. SingTel may reject the TCAR for one or more of the following reasons:

- (a) the end link for the End User's site is in respect of an Excluded Site;
- (b) the Requesting Licensee is not an FBO;

- (c) the TCAR is not in the prescribed form;
 - (d) the TCAR does not contain all the required information;
 - (e) the information in the TCAR is incorrect or inaccurate;
 - (f) SingTel has plans or otherwise proposes to decommission the IRS Tail Circuit Service within 6 months of the date of the TCAR; or
 - (g) the TCAR is received by SingTel less than 15 Business Days prior to the requested date of activation for the IRS Tail Circuit Service.
- 2.5 The TCARs from all Requesting Licensees will be processed on a non-discriminatory “first come first served” basis.

3. PROJECT STUDY

- 3.1 SingTel will perform a Project Study in relation to the TCAR submitted by the Requesting Licensee. The Project Study will normally entail a site survey to the End User’s site to determine and assess any technical and/or operational issues amongst other matters with respect to space, cable routing and equipment. Following completion of the Project Study, and in any event not later than ten (10) Business Days from the Application Date, SingTel must notify the Requesting Licensee that either:
- (a) the TCAR has been accepted, in which case SingTel will notify the Requesting Licensee of the IRS Tail Circuit Service activation date. For the avoidance of doubt, the IRS Tail Circuit Service activation date must be no later than fifteen (15) Business Days from the Application Date (**Service Activation Date**); or
 - (b) the TCAR has been rejected. SingTel may reject the TCAR for one or more of the following reasons only:
 - (i) the IRS Tail Circuit Service is unavailable as determined under the criteria in Clause 3.2 (except that the consideration on decommissioning shall not apply);
 - (ii) SingTel has reasonably determined that it does not have any IRS Tail Circuit Service in the area which is the subject of the TCAR;

- (iii) SingTel reasonably determines that it does not have available network infrastructure or equipment to provide IRS Tail Circuit Service in the area which is the subject of the TCAR;
- (iv) the Co-Location Equipment installed under Schedule 8B will not be operational by the time of SingTel's physical provisioning of the IRS Tail Circuit Service; or
- (v) the IRS Tail Circuit Service requested will be used by the Requesting Licensee as an input for the provision of any telecommunication product or service to itself or its affiliates, and it is shown that the Requesting Licensee has no intention of offering that telecommunication product or service (whether or not using the same IRS Tail Circuit Service) to non-affiliated third party customers.

CLAUSE 3.2 – APPROVED

3.2 For the purposes of this Schedule and the processing of each TCAR, SingTel may have regard to the following when assessing the availability of the IRS Tail Circuit Service:

- (a) in respect of TCARs for the IRS Tail Circuit Service of bandwidths between 64 kbps and 2 Mbps (inclusive), SingTel's reasonably anticipated requirements in the next one (1) year for Local Loop for the provision of Direct Exchange Line services in order to comply with its Universal Service Obligation;
- (b) SingTel's reasonably anticipated requirements in the next one (1) year for operations and maintenance purposes so as to comply with its Quality of Service obligations under the Code and Service Level Guarantees under the RIO;
- (c) SingTel's Customers', the Requesting Licensee's and other Licensees' requirements (including for operations and maintenance purposes) which have been ordered but not yet delivered or which have been provided;
- (d) security and confidentiality requirements or restrictions imposed on SingTel by Governmental Agencies; or
- (e) whether SingTel has plans or otherwise proposes to decommission the network equipment for the provision of the IRS Tail Circuit Service within six (6) months from the date of the Requesting Licensee's submission of the TCAR under clause

2.3, where the network equipment to be decommissioned would not be replaced by new equipment.

3.3 The Requesting Licensee shall be responsible for the relevant Charges specified in Schedule 9 for the IRS Tail Circuit Service provided under this Schedule 4C.

3.4 If a Requesting Licensee cancels its request for IRS Tail Circuit Service prior to the commencement of the Project Study, then the Requesting Licensee will only be responsible for the Application Charge. If the Requesting Licensee cancels its request for IRS Tail Circuit Service after commencement but prior to the completion of the Project Study undertaken in clause 3.1, then the Requesting Licensee must pay SingTel the Application Charge and the Project Study Charge in Schedule 9.

4. DELIVERY

4.1 If the Requesting Licensee requests cancellation of the IRS Tail Circuit Service before service activation, SingTel reserves the right to charge and the Requesting Licensee shall be liable to pay an amount not exceeding the full amount of the Installation Charges as set out in Schedule 9, and calculated according to the amount of installation work undertaken by SingTel up to the requested date of such cancellation.

4.2 If the Requesting Licensee requests a deferment of the Service Activation Date:

(i) before SingTel has commenced installation work, SingTel shall accept the deferment request, subject to the Requesting Licensee's payment of a deferment fee equivalent to 50% of the Installation Charges set out in Schedule 9, and provided the revised Service Activation Date shall be no more than thirty (30) Calendar Days from the Service Activation Date notified in clause 3.1(a). If the Requesting Licensee requests that the revised Service Activation Date be beyond the said thirty (30) Calendar Days, SingTel reserves the right to reject the deferment request and in such an event, the IRS Tail Circuit Service ordered as specified in the relevant TCAR shall be deemed cancelled and the Requesting Licensee shall pay to SingTel the Application Charge; and

(ii) after SingTel has commenced installation work, SingTel reserves the right to reject the deferment request. For the avoidance of doubt, where SingTel rejects the deferment request, SingTel will complete provisioning the IRS Tail Circuit Service by the Service Activation Date notified in clause

3.1(a), unless the Requesting Licensee requests for cancellation under clause 4.1.

- 4.3 Notwithstanding clause 4.2, SingTel will not consider any request for deferment of the Service Activation Date submitted by the Requesting Licensee on or after the date notified as the Service Activation Date under clause 3.1(a) (or such other date as determined in accordance with clause 4.2(i).
- 4.4 SingTel reserves the right to refuse to install or supply the IRS Tail Circuit Service if SingTel has evidence to substantiate a reasonably held belief to suggest that the end points do not conform to the Service as set out in clauses 1.1 to 1.4. In such an event, SingTel must provide a written response to the Requesting Licensee explaining the basis of its belief and the evidence it has relied upon.
- 4.5 The Requesting Licensee shall be responsible for:
- (a) all terminations at its own equipment; and
 - (b) providing the associated cabling and connectors between the Requesting Licensee's equipment and SingTel's distribution frame (in order to facilitate the physical termination of the link to SingTel's distribution frame in accordance with Schedule 8B); and
 - (c) patching and maintenance of its associated cables and patch cords to SingTel's network interface points (located at the Requesting Licensee's Customer site) and the associated cabling and connectors between the Requesting Licensee's equipment and SingTel's network interface points.
- 4.6 SingTel shall be responsible for:
- (a) providing the distribution frame in connection with the routing of the Requesting Licensee's IRS Tail Circuit Service; and
 - (b) the physical installation and termination of the Requesting Licensee's cabling to SingTel's distribution frame,
- in accordance with Schedule 8B.
- 4.7 Where SingTel is required to perform grooming under clause 1.8 above, SingTel shall use its reasonable endeavours to perform the grooming of the circuits in an

efficient a manner as possible, by minimising the number of physical circuits for handover to the Requesting Licensee.

4A EXPRESS PROVISIONING

- 4A.1 The Requesting Licensee may request express provisioning of the IRS Tail Circuit Service from SingTel. On receipt of such a request, SingTel will promptly and in good faith discuss with the Requesting Licensee its requirements. SingTel shall process any such request in a manner that is not less favourable (including on no less favourable terms and conditions) than the manner in which it provides express provisioning to itself, its affiliates and its customers. Where SingTel is unable to fulfil such request, SingTel must provide written reasons to the Requesting Licensee.
- 4A.2 If SingTel accepts the Requesting Licensee's request for express provisioning, SingTel must activate service within three (3) Business Days from the date of its acceptance, in which case the Requesting Licensee shall be responsible for paying the applicable Charge specified in Schedule 9 for express provisioning.
- 4A.3 Nothing in this Schedule shall prevent the Requesting Licensee from submitting a TCAR under clause 2 and concurrently requesting SingTel for express provisioning of the same circuit under clause 4A.1. In the event that the Requesting Licensee subsequently obtains express provisioning from SingTel, the TCAR shall be deemed cancelled and any Installation Charge payable upon cancellation of the TCAR shall be waived. For the avoidance of doubt, the Requesting Licensee shall remain liable to pay the Application Charge upon cancellation of the TCAR.

5. IRS TAIL CIRCUIT SERVICE RE-ROUTING, RE-LOCATION, CHANGE OF BANDWIDTH, CHANGE OF INTERFACE STANDARD AND CHANGE OF TIE-CABLE

- 5.1 Subject to clause 5.2, SingTel reserves the right to re-route the IRS Tail Circuit Service at any time. SingTel will implement any re-routing on a non-discriminatory basis and as it would carry out re-routing for itself, its affiliates and Customers.
- 5.2 Where SingTel proposes to re-route the IRS Tail Circuit Service, SingTel will provide the Requesting Licensee with fourteen (14) Calendar Days prior notice. In the case of emergency re-routing, SingTel will provide the Requesting Licensee with notice as soon as practicable.

5.3 If the Requesting Licensee makes a request for any IRS Tail Circuit Service to be relocated, such request will be subject to:

- (a) the Requesting Licensee providing the TCAR to SingTel no less than fifteen (15) Business Days prior to the requested date of relocation for IRS Tail Circuit Service;
- (b) the Requesting Licensee being liable to pay to SingTel, where applicable, a Relocation Charge as set out in Schedule 9 of the RIO; and
- (c) only the end of the circuit at the End User's site would be relocated, for which the Requesting Licensee must produce evidence that the End User is relocating from the original End User Site to the new End User site.

5.4 If the Requesting Licensee makes a request for:

- (a) a change of applicable interface standard for a IRS Tail Circuit Service, such request shall be deemed to be a request for the activation of that IRS Tail Circuit Service at the new applicable interface standard requested. For the avoidance of doubt, the Requesting Licensee shall be liable to pay to SingTel all recurring Charges specified in Schedule 9 in relation to that IRS Tail Circuit Service until the expiry of the thirty (30) Calendar Days period from the date of request for change of the applicable interface standard as specified in clause 6.3 and the Change of Interface Standard Charge as specified in Schedule 9. SingTel will use reasonable endeavours to minimise service disruption during the change in interface standards; and
- (b) a change of bandwidth, the Requesting Licensee must submit a request for the activation of the IRS Tail Circuit Service at the new bandwidth requested, in which event that new request shall be subject to the procedures in clauses 2 to 4A. If the Requesting Licensee wants to deactivate the IRS Tail Circuit Service at the existing bandwidth, the Requesting Licensee must also submit a TCDR in accordance with Clause 6.

5.5 If the Requesting Licensee makes a request for any IRS Tail Circuit Service to be provisioned with a new Tie-Cable, such request will be subject to:

- (a) the Requesting Licensee providing the request to SingTel no less than five (5) Business Days prior to the requested date of Tie-Cable change for IRS Tail Circuit Service;

- (b) the availability of the new Tie-Cable; and
- (c) the Requesting Licensee being liable to pay to SingTel, where applicable, a Tie-Cable Change Charge as set out in Schedule 9 of the RIO.

6. DEACTIVATION

- 6.1 If the Requesting Licensee wishes to deactivate an IRS Tail Circuit Service under this Schedule, it must submit a request for IRS Tail Circuit Service deactivation in the form of a Tail Circuit Deactivation Request (**TCDR**) provided in Annex 4C-4. Subject to clause 6.3, the Requesting Licensee may deactivate an IRS Tail Circuit Service at any time upon giving SingTel thirty (30) Calendar Days prior written notice.
- 6.2 SingTel shall process the TCDR and advise the Requesting Licensee of its acceptance or otherwise within one (1) Business Day of its receipt. SingTel may reject the TCDR if:
 - (i) the request for IRS Tail Circuit Service deactivation is not in the prescribed form specified in this clause;
 - (ii) the TCDR does not contain all the required information; or
 - (iii) the information in the TCDR is incorrect or inaccurate.
- 6.3 If the Requesting Licensee requests deactivation of an IRS Tail Circuit Service before the expiry of the notice period of thirty (30) Calendar Days, the Requesting Licensee shall remain liable for the recurring charges specified in Schedule 9 for that IRS Tail Circuit Service until the expiry of the thirty (30) Calendar Days notice period. Such liability for recurring charges in the event of deactivation shall commence from the date of deactivation for the remainder of the thirty (30) Calendar Days notice period.
- 6.4 The Requesting Licensee shall be responsible for the relevant Charges specified in Schedule 9 for the IRS Tail Circuit Service provided under this Schedule 4C.

7. STANDARD TERMS AND CONDITIONS

- 7.1 SingTel is responsible for the maintenance and administration of the IRS Tail Circuit Service under this Schedule.

7.2 The Requesting Licensee must at its own expense:

- (a) procure and maintain any equipment (including Customer Premise Equipment) or software that it requires to implement, receive and use the IRS Tail Circuit Service;
- (b) follow the specifications for the IRS Tail Circuit Service as set out in Annex 4C-5 without modification;
- (c) use its reasonable efforts to ensure that its equipment (and the services supplied and operated by it and used in connection with the IRS Tail Circuit Service) is fault-free, including conducting its own tests to detect any possible faults with such equipment and service it supplies and operates, before reporting any transmission malfunction to SingTel;
- (d) ensure that its equipment is able to work with the IRS Tail Circuit Service;
- (e) raise fault reports to the SingTel representative in accordance to the Fault Restoration Procedures provided in Annex 4C-6 or otherwise as notified by SingTel;
- (f) assume sole responsibility for liaising with End Users for all faults reported or enquiries raised by them, and shall not refer those End Users to SingTel (acknowledging that SingTel assumes no responsibility for and will not interface nor liaise with the End Users);
- (g) ensure that all its equipment connected to or used in conjunction with IRS Tail Circuit Service is approved for use by the Authority where applicable and is connected or used in accordance with the law and shall obtain the prior written approval of SingTel (such approval not to be unreasonably withheld) before connecting (or permitting any person to connect) any equipment to any telecommunications system operated by SingTel or any SingTel Equipment, except where SingTel has dispensed with the requirement for such approval;
- (h) ensure that its equipment (other than SingTel equipment) used or installed by or for it in conjunction with the IRS Tail Circuit Service is compatible and may properly function and operate with all other equipment (including SingTel equipment) used or installed in connection with the IRS Tail Circuit Service;
- (i) provide and maintain the Requesting Licensee's facilities and resources reasonably necessary for the proper installation, operation and maintenance of the

IRS Tail Circuit Service, when so required by SingTel and under the operating conditions and specifications set out in Annex 4C-8 and, as amended by SingTel from time to time. These facilities and resources include, but are not limited to, power points, electricity, conduits, pipes and appropriate access, licence, way-leave, or easement rights;

- (j) use and keep all SingTel equipment that is provided to the Requesting Licensee and that is within the Requesting Licensee's custody and control in good working condition (fair wear and tear excepted) in accordance with the specifications, guidelines and recommendations of the manufacturer or distributor thereof and of SingTel, and shall disconnect or cease to use any such equipment at the reasonable request of SingTel;
- (k) retain all SingTel equipment at all times in the custody and control of the Requesting Licensee at the sites occupied by the End User and the Requesting Licensee;
- (l) promptly comply with all directions given by the IDA and reasonable notices and instructions given by SingTel in respect of the installation, use or operation of the IRS Tail Circuit Service, SingTel equipment and all relevant equipment;
- (m) ensure adequate preventive measures to avoid radiations and interferences that may disrupt other SingTel services;
- (n) be fully responsible for and shall procure that the End User comply with clauses 7.2(i) and 7.2(j) as set out above and shall indemnify SingTel for any loss or damages that it may suffer as a result of any breach, or default by the End User;
- (o) be fully responsible for all modifications in the End User premise, including any additional facilities or any minor renovation works such as drilling or hacking.

7.3 The Requesting Licensee shall not:

- (a) use the IRS Tail Circuit Service other than in accordance with the sole purpose set out in clauses 1.1 to 1.4;
- (b) use SingTel's brand, name, logo, trademarks, service marks (whether registered or not) or the fact that the IRS Tail Circuit Service is provided using SingTel's network, in promoting or re-providing the Requesting Licensee's services or otherwise, or purport to own the network used to provide the IRS Tail Circuit Service;

- (c) use or permit the use of the IRS Tail Circuit Service or install, connect, link or use (or permit the installation, connection, linking or use) of any telecommunications equipment in contravention of any law or in any manner which would or is likely to cause any irritation, annoyance, embarrassment, harassment, disturbance or nuisance of any kind whatsoever to any person or which would disrupt the provision or operation of any telecommunications service by SingTel or other Licensees;
- (d) carry out or permit to be carried out any additions, improvements, adjustments, modifications, alterations or replacements to any SingTel equipment or equipment supplied by SingTel to the Requesting Licensee without the prior written consent of SingTel (such consent not to be unreasonably withheld);
- (e) use or permit the IRS Tail Circuit Service or any telecommunications equipment to be used in any manner or for any activity whatsoever which generates or is likely to generate telecommunications traffic or usage which causes or is likely to cause congestion in or disruption to the provision or operation of any telecommunications service by SingTel or other Licensees, without the prior written consent of SingTel (such consent not to be unreasonably withheld); and
- (f) use any equipment supplied by SingTel for any purpose other than that for which such equipment was supplied.

7.4 If any work, operation or use by the Requesting Licensee in relation to the IRS Tail Circuit Service causes (or SingTel reasonably believes will cause) SingTel to incur additional costs beyond the normal provisioning of the IRS Tail Circuit Service, SingTel reserves the rights to advise the Requesting Licensee of such additional costs which would be incurred by SingTel in connection with such work, operation or use and if the Requesting Licensee decides to pursue such work, operation or use, the Requesting Licensee shall reimburse SingTel for such costs.

8. ACCESS AND APPROVALS REQUIRED

8.1 Where an end of the IRS Tail Circuit Service is to be or is located at an End User site, the Requesting Licensee must obtain the permission of the End User to allow SingTel to physically access the site and deal with the equipment. The Requesting Licensee must procure that the End User must:

- (a) provide SingTel with safe and reasonable access to the End User's premises as reasonably required to enable SingTel to install, test, inspect, repair, modify and

maintain its equipment at the premises in connection with the provision of the IRS Tail Circuit Service; and

- (b) not permit any person other than a person reasonably identified as an authorised representative of SingTel to maintain, modify, repair or interfere with such equipment.

9. PROTECTION AND SAFETY

9.1 The Requesting Licensee is responsible for the safe operation of its equipment and shall be responsible for the safe operation of the IRS Tail Circuit Service and shall, so far as reasonably practicable, take all necessary steps to ensure that the IRS Tail Circuit Service use and its equipment:

- (a) does not endanger the safety of any person, including the employees, contractors, Customers or Third Party;
- (b) does not cause physical or technical harm to SingTel's Network, including but not limited to causing damage, interfering with or causing deterioration in the operation of SingTel's Network;
- (c) does not jeopardise the integrity or confidentiality of communications within SingTel's Network; or
- (d) does not threaten the security and accessibility of SingTel's Local Leased Circuits or the IRS Tail Circuit Service.

9.2 The Requesting Licensee must comply with SingTel's standard operating procedures specified in Annex 4C-9 in relation to the use of the IRS Tail Circuit Service, as amended by SingTel from time to time.

10. REQUESTING LICENSEE RIGHTS

10.1 Except to the extent expressly conferred under this Schedule 4C, the approval and provision of the IRS Tail Circuit Service does not vest in the Requesting Licensee any right, title or proprietary interest in any IRS Tail Circuit Service.

11. TERM

11.1 The Service shall commence on the Service Activation Date and shall continue for the term of the RIO Agreement until the earlier of any of the following events:

- (a) the Requesting Licensee gives notice to SingTel to deactivate the relevant IRS Tail Circuit Service under clause 6.1; or
- (b) an event of termination occurs under clause 13.

11.2 The Parties acknowledge that the Authority may terminate SingTel's obligation to provide IRS Tail Circuit Service at any time. Notwithstanding any provision in this Schedule 4C, in the event that the Authority modifies or removes the requirement on SingTel to provide the IRS Tail Circuit Service to the Requesting Licensee, SingTel shall have the right, as the case may be, to:

- (a) modify the terms and conditions contained in this Schedule 4C for the supply of the IRS Tail Circuit Service; or
- (b) terminate the supply of the IRS Tail Circuit Service,

in compliance with the Authority's direction.

12. SUSPENSION AND PLANNED OUTAGES

12.1 Subject to clause 12.2 of the main body of this RIO Agreement, SingTel may suspend the supply of the IRS Tail Circuit Service until further notice on fourteen (14) Calendar Days notice to the Requesting Licensee if the IRS Tail Circuit Service causes or is likely to cause physical or technical harm to any telecommunications network, system or services (whether of SingTel or any other person) including but not limited to causing damage, interfering with or causing deterioration in the operation of the SingTel Network.

12.2 SingTel may carry out repairs or upgrades to any equipment or facility used to provide the IRS Tail Circuit Service by giving fourteen (14) Calendar Days notice to the Requesting Licensee (such repair or upgrades to be assessed and performed on the same criteria as SingTel provides to itself, its affiliates and Customers).

13. TERMINATION

13.1 Subject to clause 13.2 of the main body of this RIO Agreement, SingTel may immediately terminate the supply of an IRS Tail Circuit Service (in relation to a specific circuit) if:

- (a) the Requesting Licensee uses that circuit for a purpose other than that set out in clauses 1.1 to 1.6;

- (b) the Requesting Licensee has committed a service affecting material breach of this Schedule and SingTel has given seven (7) Calendar Days notice of such breach and the Requesting Licensee has failed to rectify such breach within that time;
- (c) the Requesting Licensee has committed a non-service affecting material breach of this Schedule (including but not limited to failure to pay any sum for which the Requesting Licensee has been Invoiced) and SingTel has given fourteen (14) Calendar Days notice of such breach and the Requesting Licensee has failed to rectify such breach within that time;
- (d) in SingTel's reasonable opinion, the Requesting Licensee is using that circuit in contravention of an applicable law, licence, code, regulation or direction and SingTel has the necessary confirmation from the relevant Governmental Agencies that the Requesting Licensee is in contravention of the applicable law, licence, code, regulation or direction;
- (e) the Requesting Licensee abandons that circuit, provided that the Requesting Licensee has received ten (10) Business Days prior notice of SingTel's intention to terminate on such grounds and the Requesting Licensee did not dispute such notice by SingTel;
- (f) that circuit has become unsafe for its purpose;
- (g) SingTel's right to own, maintain or operate that circuit or the IRS Tail Circuit Service is revoked or terminates or expires; or
- (h) use of that circuit causes or is likely to cause physical or technical harm to any telecommunications network, system or services (whether of SingTel or any other person) including but not limited to causing damage, interfering with or causing deterioration in the operation of the SingTel Network.

13.2 The Requesting Licensee may immediately terminate the acquisition of an IRS Tail Circuit Service (in relation to a specific circuit) if:

- (a) SingTel has committed a service affecting material breach of this Schedule and the Requesting Licensee has given seven (7) Calendar Days notice of such breach and SingTel has failed to rectify such breach within that time; or
- (b) SingTel has committed a non-service affecting material breach of this Schedule and the Requesting Licensee has given fourteen (14) Calendar Days notice of such breach and SingTel has failed to rectify such breach within that time.

- 13.3 SingTel shall give the Requesting Licensee six (6) months prior notice of the closure of the SingTel Co-Location Site at which the IRS Tail Circuit Service terminates, except in cases where circumstances beyond SingTel's reasonable control prevent SingTel from providing such notice (in which case SingTel must provide notice as soon as practicable after becoming aware of the closure). SingTel will use its reasonable endeavours to minimise service disruption to the Requesting Licensee's Tail Circuits prior to the closure of the SingTel Co-Location Site. The Requesting Licensee shall bear its own cost associated with the closure of the Co-Location Site and the termination of the supply of the IRS Tail Circuit Service, and the Requesting Licensee shall solely be responsible for making such alternative arrangements as are necessary to continue to provide its Customers with services. In the event that the Requesting Licensee requests assistance from SingTel, within thirty (30) Business Days after receiving notice under this clause, to provide an alternative solution to the IRS Tail Circuit Service which is being terminated, SingTel shall use its reasonable endeavours to assist the Requesting Licensee in finding suitable alternatives to the IRS Tail Circuit Service that is the subject of termination provided that nothing in this clause shall restrict SingTel's right to terminate under this clause 13 and that the ultimate responsibility to find an alternative lies with the Requesting Licensee.
- 13.4 If during the term of supply of the IRS Tail Circuit Service (in relation to a specific circuit), SingTel has plans to decommission that circuit, SingTel may provide the Requesting Licensee with at least six (6) months prior notice of its intention to terminate the supply of that circuit.
- 13.5 If this Schedule is terminated or expires for any reason, or the RIO Agreement is terminated for any reason, any supply of the relevant IRS Tail Circuit Service is also terminated.

14. EXPIRY OF TERM

- 14.1 Upon expiry or termination of the IRS Tail Circuit Service:
- (a) the Requesting Licensee must immediately discontinue the use of the IRS Tail Circuit Service;
 - (b) SingTel shall disconnect the Requesting Licensee's connectors terminated at SingTel's distribution frame; and

- (c) the Requesting Licensee must immediately disconnect the connectors terminated at its distribution frame and remove the associated cabling between the Requesting Licensee's equipment and SingTel's distribution frame.
- 14.2 If the Requesting Licensee fails to disconnect and remove the associated cabling and connectors between the Requesting Licensee's equipment and SingTel's distribution frame under clause 14.1, SingTel shall remove the Requesting Licensee's associated cabling and connectors. The Requesting Licensee shall pay to SingTel all reasonable costs associated with the work undertaken by SingTel including the disposal of the Requesting Licensee's associated cabling and connectors. In such event, the Requesting Licensee shall have no claim whatsoever against SingTel.

ANNEX 4C.1 IRS TAIL CIRCUIT SERVICE BANDWIDTH

IRS TAIL CIRCUIT SERVICE BANDWIDTH

The IRS Tail Circuit Service supplied as a single circuit connects the End User's site to the Requesting Licensee's Co-Located Equipment (such Co-Location obtained under Schedule 8B of the RIO Agreement) at SingTel's Exchange Building nearest to and serving the End User's site, for the following bandwidths:

1. 64 kbps;
2. 128 kbps;
3. 192 kbps;
4. 256 kbps;
5. 384 kbps;
6. 512 kbps;
7. 768 kbps;
8. 1024 kbps;
9. 1536 kbps;
10. 1984 kbps;
11. 2 Mbps;
12. 45 Mbps; and
13. 155 Mbps.

ANNEX 4C.2 EXCLUDED SITES

The IRS Tail Circuit Service will not be provided in respect of any of the following Excluded Sites:

No.	Excluded Sites
1.	Submarine cable landing stations;
2.	Satellite earth stations;
3.	SingTel exchanges;
4.	FBO exchanges;
5.	Manholes;
6.	Lead-in pipes;
7.	Ducts;
8.	Outdoor Cabinets;
9.	Power Rooms;
10.	Building MDF/TER/Riser rooms;
11.	Sites outside mainland Singapore (for the avoidance of doubt, sites within mainland Singapore include Sentosa Island and Jurong Island); and
12.	Base stations for mobile network and wireless broadband access network.

ANNEX 4C.3 REQUEST FORM FOR IRS TAIL CIRCUIT SERVICE ACTIVATION



Date: _____

Application Reference Number: _____

IRS Tail Circuit Service Activation Request

To: Manager, Network Integration and Interconnect

Fax: 65-6848 4113

1. Requesting Licensee Particulars

Requesting Licensee Name: _____

Requesting Licensee BRN: _____

Name: _____

Signature: _____

Telephone: _____

Billable Account No: _____

Please tick relevant box:

☐

Groomed Circuit

☐

Non-Groomed Circuit

☐

Change of Interface Standard

Facsimile: _____

Company Stamp: _____

2. Requesting Licensee Contacts for Test/Maintenance

Name (at End-User's site):

Name (at Co-Location Space):

Telephone: _____

Telephone: _____

Facsimile: _____

Facsimile: _____

3. Intended Activation Date: _____ (Normal/Express)

4. End-User's site For multiple circuits, please complete and attach additional sections of the form for this purpose.

Co-Location Space

4.1 Customer Name: _____

4.2 Site address (with unit number, where available):

Location of Requesting Licensee's Co-
Located Equipment [SingTel Exchange]:

Specific description of installation location where
the unit number is unavailable (eg automatic teller
machines): _____

4.3 Postal Code: _____

4.4 Bandwidth: _____
(Please refer to Annex 4C-1 for the bandwidth required)

Bandwidth: _____

4.5 Equipment Type: _____

Equipment Type: _____

4.6 Equipment Interface Type: _____

Equipment Interface Type: _____

IRS Tail Circuit Service Activation Request

Application Reference Number: _____

5. Tie -Cable Assignment (Tie-Cable identity or reference number installed under Schedule 8B)

n x 64 kbps Tie-Cable: _____

2 Mbps Tie-Cable: _____

Coaxial Tie-Cable: _____

Fibre Tie-Cable: _____

6. SingTel's Reply to the Requesting Licensee

☐

Application returned – incomplete/illegible

☐

Not Approved

Reason for Rejection: _____

☐

Approved

SingTel Approval Code: _____

Service Activation Date: _____

Circuit Reference Number: _____

Timeslot (where applicable): _____

Wiring Date & Time: _____

Sign: _____

Contact Number: _____

Name: _____

Fax Number: _____

7. Processing Status

Received Date: _____ Queue Status: _____ Processed Date: _____

ANNEX 4C.4 REQUEST FORM FOR IRS TAIL CIRCUIT SERVICE DEACTIVATION



Date: _____

Application Reference Number: _____

IRS Tail Circuit Service Deactivation Request

To: Manager, Network Integration and Interconnect

Fax: 65-6848 4113

1. Requesting Licensee Particulars

Requesting Licensee Name: _____

Requesting Licensee BRN: _____

Name: _____

Signature: _____

Telephone: _____

Billable Account No: _____

Please tick relevant box:

☐

Groomed Circuit

☐

Non-Groomed Circuit

Facsimile: _____

Company Stamp: _____

2. Requesting Licensee Contacts for Test/Maintenance

Name (at End-User's site):

Name (at Co-Location Space):

Telephone: _____

Telephone: _____

Facsimile: _____

Facsimile: _____

3. Intended Deactivation Date: _____

Circuit Reference Number: _____

4. End-User's site For multiple circuits, please complete and attach additional sections of the form for this purpose.

Co-Location Space

4.1 Customer Name: _____

4.2 Site address (with unit number, where available):

Location of Requesting Licensee's Co-
Located Equipment [SingTel Exchange]:

Specific description of installation location where
the unit number is unavailable (eg automatic teller
machines): _____

4.3 Postal Code: _____

4.4 Bandwidth: _____
(Please refer to Annex 4C-1 for the bandwidth required)

Bandwidth: _____

4.5 Equipment Type: _____

Equipment Type: _____

4.6 Equipment Interface Type: _____

Equipment Interface Type: _____

IRS Tail Circuit Service Deactivation Request

Application Reference Number: _____

5. Tie -Cable Assignment (Tie-Cable identity or reference number installed under Schedule 8B)

n x 64 kbps Tie-Cable: _____

2 Mbps Tie-Cable: _____

Coaxial Tie-Cable: _____

Fibre Tie-Cable: _____

6. SingTel's Reply to the Requesting Licensee☐ Application returned – incomplete/illegible☐ Not Approved Reason for Rejection: _____☐ Approved SingTel Approval Code: _____

Deactivation Date: _____

Sign: _____

Contact Number: _____

Name: _____

Fax Number: _____

7. Processing Status

Received Date:_____ Queue Status:_____ Processed Date:_____

ANNEX 4C.5 TECHNICAL INFORMATION OF IRS TAIL CIRCUIT SERVICE

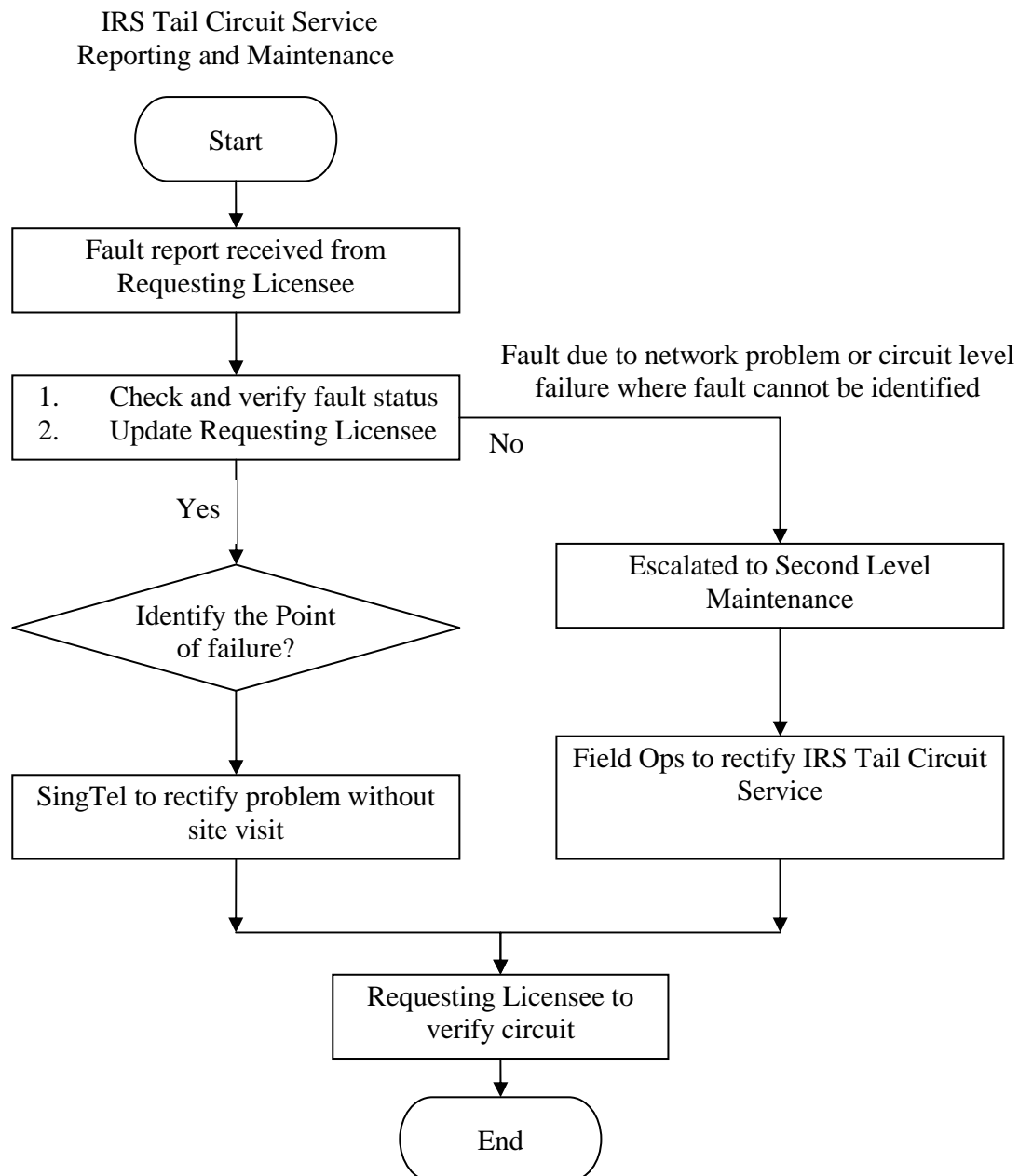
1. The IRS Tail Circuit Service provided shall be based on the specifications listed in the table below. The Requesting Licensee must follow the specifications with no modifications permitted.
2. Interface standard will be as follows:

For IRS Tail Circuit Service

Speed	Interface Standard	Network Interface Point (and other interface options where available)
64 kbps 128 kbps 192 kbps 256 kbps 384 kbps 512 kbps 768 kbps 1024 kbps	V.35, for handover at End User site V.35 or G.703, for handover at Co-Location Space, but only G.703 for handover of Groomed Tail Circuits at Co-Location Space	For V.35: 34-pin Winchester type connector. Other options (X21) are subject to availability. For G.703: 120-ohm balanced, 4 wire twisted pair
1536 kbps 1984 kbps	V.35 or G.703, but only G.703 for handover of Groomed Tail Circuits at Co-Location Space	For V.35: 34-pin Winchester type connector. Other options (X21) are subject to availability. For G.703: 120-ohm balanced, 4 wire twisted pair
2 Mbps	G.703	120-ohm balanced, 4 wire twisted pair
45 Mbps	G.703	75-ohm unbalanced, BNC coaxial
155 Mbps	G.957/958 and G.707	1310nm, fibre connector: SC-PC

**ANNEX 4C.6 FAULT REPORTING PROCEDURE, INSTALLATION AND MAINTENANCE
REBATES FOR IRS TAIL CIRCUIT SERVICE**

1. FAULT REPORTING PROCEDURE



Note: The Requesting Licensee shall compensate SingTel for the cost incurred in responding to a fault that is not caused by SingTel based on the No-Fault-Found Rates as provided in Schedule 9.

2. REBATES FOR IRS TAIL CIRCUIT SERVICE APPLICATION PROCESSING AND INSTALLATION WORK

Missed Acknowledgement By	Rebates (as a percentage of the application charge in Schedule 9)
1 Day	10 % of application charge
2 Days	20 % of application charge
3 Days	50 % of application charge
4 Days	75 % of application charge
5 Days or more	100 % of application charge

Missed Service Activation Date By	Rebates (as a percentage of the installation charge in Schedule 9)
1 Day	10 % of installation charge
2 Days	20 % of installation charge
3 Days	50 % of installation charge
4 Days	75 % of installation charge
5 Days or more	100 % of installation charge

- (a) The Installation Work under this section covers the provision of the IRS Tail Circuit Service up to SingTel's network interface points.
- (b) If the End User's premises are not under SingTel's telecommunication cabling distribution scheme or the cabling network within the said premises is not provided by SingTel, then SingTel shall propose for it to provision and install wiring and socket(s) for the Requesting Licensee from SingTel's network interface points to the End User's premises, which shall form part of the installation work, and SingTel shall charge and the Requesting Licensee shall be liable to pay an additional cost as prescribed by SingTel from time to time.
- (c) If the Requesting Licensee wishes to decline SingTel's proposal in respect of the provision and installation of wiring and/or socket(s), then the Requesting Licensee may either:

- (i) appoint, at its own cost, a licensed contractor to carry out the said work and perform the necessary testing with SingTel upon completion of the said work, by the agreed upon Service Activation Date; or
 - (ii) terminate the IRS Tail Circuit Service.
- (d) If the Requesting Licensee's licensed contractor fails to complete the said work and testing by the Service Activation Date, then the Requesting Licensee shall be required to request for a deferment of the Service Activation Date. If the Requesting Licensee terminates the IRS Tail Circuit Service before the relevant Service Activation Date, then the Requesting Licensee shall pay to SingTel the amounts as stipulated in clause 4.1 of this Schedule.
- (e) Subject to the Requesting Licensee agreeing to the proposal under paragraph (b) above, if SingTel fails to complete the installation work by the Service Activation Date owing to matters within SingTel's control, then the Requesting Licensee may make a claim in accordance with section 4 of this Annexure.
- (f) Where the IRS Tail Circuit Service is provided without a physical visit by SingTel's staff and/or agent to the End User's premises, SingTel shall notify the Requesting Licensee of the date and/or time **(Activation Time)** when the IRS Tail Circuit Service shall be activated. If the IRS Tail Circuit Service is not activated at or after the Activation Time, then the Requesting Licensee shall report such non-activation fault to SingTel within forty eight (48) hours **(First Period)** after the Activation Time to enable SingTel to check and rectify the fault leading to the non-activation, if necessary. When the Requesting Licensee reports such non-activation fault, then SingTel shall check and rectify the fault within forty eight (48) hours or such longer period that SingTel reasonably requires **(Second Period)** from the time such non-activation fault is reported by the Requesting Licensee, and the revised Activation Time shall be correspondingly extended to the end of the said Second Period provided always that the fault lies within SingTel's network and its reasonable control.

3. REBATES FOR IRS TAIL CIRCUIT SERVICE MAINTENANCE

Outage (x)	Rebates (as a percentage of the monthly rental charge in Schedule 9)
6 hrs < x < 12 hrs	10 % of monthly rental charge
12 hrs < x < 24 hrs	40 % of monthly rental charge

24 hrs < x < 48 hrs	75 % of monthly rental charge
X > 48 hrs	100 % of monthly rental charge

- (a) The scope of maintenance work under this paragraph covers:
- (i) restoration of the IRS Tail Circuit Service up to SingTel's network interface points; and
 - (ii) any replacement, if deemed necessary by SingTel, of such wiring and/or socket(s), which has been laid or installed by SingTel between SingTel's network interface points and the end-user's premises. Such replacement shall be payable by the Requesting Licensee to SingTel at a reasonable cost prescribed by SingTel from time to time. If the Requesting Licensee does not agree to pay the said cost, then SingTel reserves the absolute right not to carry out any replacement work and shall be absolved from any obligation to maintain the IRS Tail Circuit Service. For the avoidance of doubt, if the Requesting Licensee or its licensed contractor provisions and installs the relevant wiring and/or sockets, then the Requesting Licensee is responsible for its own maintenance work.
- (b) If SingTel fails to restore the IRS Tail Circuit Service in accordance with paragraph (a)(ii) above owing to matters within SingTel's control, then the Requesting Licensee may make a claim in accordance with section 4 of this Annexure.

4. CLAIM PROCEDURES

- (a) The Requesting Licensee may claim a rebate of no more than the applicable installation Charges in respect of the IRS Tail Circuit Service affected at any one time for the period of delay of the installation work beyond Service Activation Date. For the purposes of this clause, the installation charges applicable as at the date of the completion of the installation work shall be used to determine the amount of the rebate. The claimable amount and the period of delay leading to such claim shall be as specified by SingTel from time to time.
- (b) Subject to paragraph (b)(i) and (b)(ii) below, the Requesting Licensee may claim a rebate of no more than the applicable monthly recurring Charges in respect of the IRS Tail Circuit Service with respect to which a fault reported by the Requesting Licensee to SingTel's designated fault reporting centre is confirmed at

any one time and there is a delay of IRS Tail Circuit Service restoration by SingTel. The claimable amount and the period of delay of IRS Tail Circuit Service restoration leading to such claim shall be as specified by SingTel from time to time.

- (i) The Requesting Licensee's claim under paragraph (b) above shall be limited to the failure of the IRS Tail Circuit Service only. The Requesting Licensee shall not be entitled to make any claim in respect of any other service whatsoever which may be or is directly or indirectly affected by the failure of the IRS Tail Circuit Service.
 - (ii) The aggregate of the claims made by the Requesting Licensee for the IRS Tail Circuit Service in any calendar month shall in no event exceed the latest monthly recurring Charges payable for that IRS Tail Circuit Service for that month. For the purpose of this clause, the fault restoration time for the IRS Tail Circuit Service is used to determine a claim made in that calendar month.
- (c) A claim by the Requesting Licensee shall be made in writing within fourteen (14) Calendar Days of the completion of either the installation work or the maintenance work. The amount in respect of any claim shall be paid to the Requesting Licensee in the form of a rebate.
- (d) If the Requesting Licensee is entitled to a rebate pursuant to the claim made hereunder, then the amount of the rebate will be credited into the Requesting Licensee's account after it has been processed by SingTel and will be reflected in SingTel's bill to the Requesting Licensee in accordance with SingTel's billing cycle.
- (e) The guarantee and rebates provided by SingTel under this Annexure:
 - (i) are of an ex-gratia nature and personal to the Requesting Licensee and are non-transferable; and
 - (ii) are subject to this Schedule, the Telecommunications Act (Cap. 323) and any rules or regulations made under the same.
- (f) Despite anything to the contrary in this section 4, if the Requesting Licensee qualifies to make any claim under this Annexure, SingTel shall honour its obligations in respect of that claim but in the event of a dispute as to whether the Requesting Licensee qualifies to make a claim or as to the quantum of the claim

payable to the Requesting Licensee, the dispute shall be resolved in accordance with the Dispute Resolution Procedures in Schedule 11 of the RIO, or in the case of a Billing Dispute, in accordance with Schedule 10 of the RIO.

5. INFORMATION TO BE PROVIDED BY THE REQUESTING LICENSEE BEFORE REPORTING FAULT

Items	Description / Remarks
Identification of faulty segments	Fault report should identify the segment of the suspected IRS Tail Circuit Service. Segment refers to the link between any two of the termination points at different locations.
Essential information	Circuit/Link reference, location, time of fault occurrence, etc.
Contact person	<ol style="list-style-type: none"> To provide contact person name and contact number for purpose of fault updates. To provide the Requesting Licensee's officers' names and contact numbers who would be present at the End User's site and Requesting Licensee's Co-Location Space at the SingTel Exchange Building nearest to and serving the End User's site to provide access to and identification of equipment.
Access for SingTel staff	Security clearance for SingTel staff into Requesting Licensee's customer's premises for the purpose of fault isolation.
Fault Management Centre (FMC)	Tel: 1800-7880022
Any other information	Any other information that SingTel may require from time to time.

Note: Fault Docket shall be issued upon fault reporting by the Requesting Licensee. Docket shall be the reference for all communication between Requesting Licensee and FMC.

6. FOUND NO FAULT

The Requesting Licensee shall compensate SingTel for the cost incurred in responding to a fault that is not caused by SingTel based on the No-Fault-Found Rates as provided in Schedule 9.

ANNEX 4C.7 DERIVATION OF ZONE

For the purpose of this Schedule, the derivation of Zone to determine whether an end is located in the Central Zone (CTR) or Non-Central Zone (NCTR) is by Postal Code's Sector Code (1st 2 digits of the 6-digit postal code or last 2 digits of the 4-digit postal code).

“CBD proxy-region” refers to the Singapore Postal Code in use as at the 20 July 2004:

Sector Code	Zone Code
03	CTR
04	CTR
05	CTR
06	CTR
07	CTR
08	CTR
09	CTR
10	CTR
11	CTR
13	CTR
14	CTR
15	CTR
16	CTR
17	CTR
18	CTR
22	CTR
23	CTR
24	CTR
27	CTR

Sector Code	Zone Code
01	NCTR
02	NCTR
12	NCTR
19	NCTR
20	NCTR
21	NCTR
25	NCTR
26	NCTR
28	NCTR
29	NCTR
30	NCTR
31	NCTR
32	NCTR
33	NCTR
34	NCTR
35	NCTR
36	NCTR
37	NCTR
38	NCTR
39	NCTR
40	NCTR
41	NCTR
42	NCTR
43	NCTR
44	NCTR
45	NCTR
46	NCTR
47	NCTR
48	NCTR
52	NCTR
58	NCTR
59	NCTR
60	NCTR
61	NCTR
62	NCTR

Sector Code	Zone Code
49	NCTR
50	NCTR
51	NCTR
53	NCTR
54	NCTR
55	NCTR
56	NCTR
57	NCTR
63	NCTR
64	NCTR
65	NCTR
66	NCTR
67	NCTR
68	NCTR
69	NCTR
70	NCTR
71	NCTR
72	NCTR
73	NCTR
74	NCTR
75	NCTR
76	NCTR
77	NCTR
78	NCTR
79	NCTR
80	NCTR
81	NCTR
82	NCTR
83	NCTR

ANNEX 4C.8 OPERATING CONDITIONS AND SPECIFICATIONS

The following operating conditions and specifications apply to the Requesting Licensee's provision and maintenance of all facilities and resources reasonably necessary for the proper installation, operation and maintenance of the IRS Tail Circuit Service under clause 7.2(i).

1. LOCATION

The following factors shall be considered in determining the location for the installation of the SingTel's equipment:

- (a) whether the Requesting Licensee's equipment and/or service emits or is likely to emit any electromagnetic radiation and the likely effect that that equipment and/or service (or its proximity to SingTel's equipment) may have on the operation of SingTel's equipment;
- (b) the proximity of any materials that could be hazardous to equipment and/or personnel or which carry a potential hazard, such as fire;
- (c) whether suitable site access is available, including but not limited direct access to the site room and access to the loading bay and goods lift;
- (d) the location should be weather protected and not subject to flooding.

2. SPACE

- (a) The space for SingTel's equipment should have a clear height for the equipment rack. Beams below this height must be clear of the equipment rack. Both beams and pillars should not affect or disrupt the movement of operations personnel.
- (b) The space with SingTel's equipment installed in it should be large enough to permit:
 - (i) all the installed equipment to be accessed;
 - (ii) doors to be opened freely; and
 - (iii) the movement of the installed equipment in the event that new equipment is installed or removed.

3. SECURITY

- (a) The equipment room must have adequate security to restrict access.
- (b) SingTel's staff must be allowed access to the room at all times.

4. POWER SUPPLY

- (a) The site must be equipped with an AC power supply. The deviation specifications of the power supply shall be as follows:

AC Power Supply	
100Vac-240Vac	Voltage deviation - 10% plus or minus
50Hz / 60 Hz	Frequency deviation - 1% plus or minus

5. EQUIPMENT GROUNDING

- (a) Where SingTel's equipment requires Building Principle Grounding, the Building Principle Ground must be less than 5 ohms.
- (b) The Building Principle Ground within the building premises must follow the Power Grid Code of Practice CP 5 and be endorsed by the Professional Engineer (PE).

6. LIGHTING

- (a) A main and emergency lighting system must be installed by the Requesting Licensee for the space to ensure that the area is provided with lighting.
- (b) Fluorescent lighting fixtures (or equivalent) will be provided by the Requesting Licensee at regular spacing intervals mounted in the ceiling grid. The lighting fixture shall not be installed right above the cabinet.

7. FLOORING

- (a) An anti-static dust free floor is required (a tiled floor is recommended). The floor should be capable of supporting 600 Kg per square metre. Overhead racking is required for cabling.

- (b) Raised computer type flooring with the same load rating as set out in paragraph 7(a) above can be substituted in lieu of the overhead cable racks. The space under the raised floor should be provided with drainage to protect against flooding or trapped water.
- (c) A water detection system is required for raised flooring.

8. TEMPERATURE AND HUMIDITY

Common space must have air-conditioning 24 hours a day at all times.

9. FIRE ALARM SYSTEM AND FIRE PROTECTION SYSTEM

- (a) The space shall be protected by a fire alarm system and a smoke detection system.
- (b) Water sprinkler-type fire extinguishing equipment is not to be used. A fire extinguishing system for electrical and computer-type environments must be provided. A Halon or equivalent system is highly recommended.

**ANNEX 4C.9 STANDARD OPERATING PROCEDURES IN RELATION TO USE OF THE IRS
TAIL CIRCUIT SERVICE**

In using SingTel's equipment, the Requesting Licensee must ensure that:

- (a) SingTel's equipment is protected from the elements (e.g. rain and sun) at all times;
- (b) SingTel's equipment is not exposed to dusty conditions;
- (c) SingTel's equipment is not subject to hazardous conditions that may or may be likely to damage or affect its normal operation (e.g. proximity to electromagnetic radiation);
- (d) SingTel's equipment is protected from fire with a fire extinguishing system that is appropriate for use in electrical and computer-type environments (i.e. not water sprinkling type system);
- (e) SingTel's equipment is operated in accordance with the operating conditions and specifications set out in Annex 4C-8;
- (f) SingTel's equipment is not moved to a location other than the location to which it was delivered;
- (g) SingTel's equipment is not altered, added, improved or interfered with in any way whatsoever;
- (h) SingTel's equipment is not switched off or powered off after it has been put into operation;
- (i) the labels or markings attached to SingTel's equipment are not changed, defaced, obscured or removed.

ANNEX 4C.10 NETWORK INTERFACE POINTS

