

SCHEDULE 7A

WHOLESALE DARK FIBRE SERVICE

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SCHEDULE 7A

WHOLESALE DARK FIBRE SERVICE

1. SCOPE

- 1.1 This Schedule sets out the terms and conditions under which SingTel will provide the Requesting Licensee with the Wholesale Dark Fibre Service for the sole purpose of the Requesting Licensee providing telecommunication services to the Requesting Licensee's Customers.
- 1.2 SingTel will provide the Wholesale Dark Fibre Service to the Requesting Licensee on a point to point basis between Requesting Licensee sites, SingTel sites and customer sites (but not between a customer site and another customer site). The Dark Fibre routing between the point to point of the Requesting Licensee shall be at the sole discretion of SingTel.
- 1.3 This Schedule only applies to the Requesting Licensee if it is an FBO providing a wireline or broadband service and who have obtained prior approval from the Authority to acquire the Wholesale Dark Fibre on these terms and conditions.
- 1.4 Resale of the Wholesale Dark Fibre Service acquired under these terms and conditions is strictly prohibited.

2. ORDERING AND PROVISIONING PROCEDURE

- 2.1 The Requesting Licensee shall submit a Request for Wholesale Dark Fibre Service in the form containing the following information:
 - (a) the Authority's approval letter;
 - (b) point to point addresses.
 - (c) location and/or site plan of the required Dark Fibre that the Requesting Licensee seek;
 - (d) number of Dark Fibres requested between the point to point addresses;

- (e) the Requesting Licensee's proposed use of the Wholesale Dark Fibre Service;
 - (f) the Requesting Licensee contact details;
 - (g) such other information as SingTel reasonably requires.
- 2.2 All applications for the Wholesale Dark Fibre Service from all Licensees will be processed on a first come first serve basis subject to the total cumulative number of applications to be processed in Clause 2.3.
- 2.3 The cumulative number of Request for Wholesale Dark Fibre Service to be processed are:
- (a) four (4) Requests from any Licensee shall be accepted on each Business Day, with subsequent Requests overflowing to the next Business Day; and
 - (b) ten (10) Requests from all Licensees shall be accepted each week, with subsequent Requests overflowing to the next week.
- 2.4 SingTel shall acknowledge the receipt of the Request for Wholesale Dark Fibre Service by 5pm on the next Business Day by providing the Requesting Operator with a request identification number and the date the application would be processed.
- 2.5 The Requesting Licensee shall pay the application fee specified in Schedule 9 regardless of the outcome of the Request for Wholesale Dark Fibre Service.
3. **STUDIES**
- 3.1 SingTel will use its reasonable endeavours to perform a Project Study in relation to the Requesting Licensee's Request for Wholesale Dark Fibre Service within ten (10) Business Days after receipt of the Request.
- 3.2 Following completion of the Project Study, SingTel will notify the Requesting Licensee of either its In-principle Approval (**In-principle Approval**) or rejection of the Request for Wholesale Dark Fibre Service.
- 3.3 SingTel may reject a Request for Wholesale Dark Fibre Service if:

- (a) the Authority's approval letter is not attached;
 - (b) the Requesting Licensee is not an FBO providing a wireline or broadband service;
 - (c) the Request for Wholesale Dark Fibre Service is not in the prescribed form;
 - (d) the Request for Wholesale Dark Fibre Service does not contain all the required information;
 - (e) the Wholesale Dark Fibre Service is not available as determined by SingTel;
 - (f) SingTel does not have any Dark Fibre in the area where the request for access to Dark Fibre is requested;
 - (g) SingTel is not reasonably satisfied that the use of the Wholesale Dark Fibre Service is for the provision of telecommunication services to Customer; or
 - (h) the Requesting Licensee has not obtained access to the necessary sites for connection of the Wholesale Dark Fibre Service.
- 3.4 The Requesting Licensee acknowledges that a grant by SingTel of the In-Principle Approval does not mean that SingTel is obliged to ensure that the Wholesale Dark Fibre Service will be available at the required time.

4. DETAILED STUDY

- 4.1 Within five (5) Business Days from the In-Principle Approval, the Requesting Licensee shall provide its agreement:
- (a) to proceed with a Detailed Study which would include a site survey conducted by SingTel with the presence of Requesting Licensee to establish the availability of the building facilities and routing of the Wholesale Dark Fibre Service; and
 - (b) to pay the Charges incurred in conducting the Detailed Study.

If the Requesting Licensee does not notify SingTel to proceed with a Detailed Study or pay agree to pay the Charges under this clause, the Requesting Licensee's Request for Wholesale Dark Fibre Services shall lapse.

- 4.2 Upon the receipt of the Requesting Licensee's agreement in clause 4.1, SingTel shall initiate a Detailed Study on the availability of the Wholesale Dark Fibre Service.
- 4.3 SingTel shall use its reasonable endeavours to provide its results of the Detailed Study within twenty five (25) Business Days from the receipt of the Requesting Licensee's agreement under clause 4.2.
- 4.4 On completion of the Detailed Study, SingTel shall notify the Requesting Licensee whether the Wholesale Dark Fibre Service is available or not.
- 4.5 If the Detailed Study identifies that the Wholesale Dark Fibre Service is available, SingTel shall notify the Requesting Licensee of its final approval (**Final Approval**) together with the following information:
- (a) the location of the Fibre Termination Block;
 - (b) the estimated Ready For Service date;
 - (c) the estimated charges that SingTel would incur in the provision of the Dark Fibre consisting of;
 - (i) patching of intermediate points;
 - (ii) printing of plans;
 - (iii) provision and installation of the Dark Fibre;
 - (iv) any other charges as reasonably incurred by SingTel for the provisioning of Dark Fibre;
 - (d) the number of Dark Fibres approved.
- 4.6 The Requesting Licensee shall provide its agreement to proceed with the installation of Wholesale Dark Fibre Service within five (5) Business Days from the Final

Approval. If the Requesting Licensee does not respond, its Request for Wholesale Dark Fibre Service will be deemed to be cancelled.

5. DELIVERY

5.1 Upon receipt of the Requesting Licensee's agreement under clause 4.6, SingTel shall install the Wholesale Dark Fibre Service within twenty five (25) Business Days or such longer time as SingTel notifies the Requesting Licensee otherwise.

5.2 SingTel will advise the Requesting Licensee when the installation of the Wholesale Dark Fibre Service is completed (**Completion Date**). The Requesting Licensee shall provide its own patch cords to connect to SingTel Fibre Termination Block to their equipment or final destination.

6. CABLE DIVERSION

6.1 SingTel may carry out fibre diversion at the request of the Government Agencies, private developers and other relevant parties.

6.2 The Requesting Licensee acknowledges that the fibre cable length and the routing of the Wholesale Dark Fibre Service may change resulting in the increase of the Dark Fibre attenuation loss. SingTel shall not be held responsible for any such attenuation loss.

7. DARK FIBRE RE-ROUTING

7.1 Subject to clause 7.2, SingTel reserves the right to, at any time, re-route the Dark Fibre without prior notification given to the Requesting Licensee.

7.2 Where SingTel proposes to re-route the Dark Fibre, SingTel will use its reasonable endeavours to provide prior notice of such re-routing to the Requesting Licensee.

8. FORECASTS

8.1 On the first day of each Calendar Quarter, the Requesting Licensee shall submit to SingTel forecasts for the following six months, containing the following information:

(a) the likely number of Requests for Wholesale Dark Fibre Services; and

- (b) the number of Dark Fibres likely to be requested in such Requests for Wholesale Dark Fibre Services.

9. STANDARD TERMS AND CONDITIONS

- 9.1 SingTel is responsible for maintenance and administration of the Wholesale Dark Fibre Service under this Schedule.
- 9.2 The Requesting Licensee shall be responsible for patching and maintenance of its patch cords from the SingTel Fibre Termination Block to the Requesting Licensee's equipment or final destination. SingTel will be responsible for maintaining the Dark Fibre up to SingTel's Fibre Termination Block.
- 9.3 If in the course of each Parties' own activities, when either Party detects a fault, defect or problem in the other's Party's fibre cable or patch cords, it shall notify the other Party as soon as practicable.
- 9.4 The Requesting Licensee must:
 - (a) take such action as a reasonably prudent Licensee would take in relation to the Wholesale Dark Fibre Service;
 - (b) keep the Fibre Termination Block and the fibre cable and its surrounding area free of debris and in a tidy and safe condition;
 - (c) immediately notify SingTel of any damage to the SingTel's fibre cable and Fibre Termination Block consequent upon its act or omission.
- 9.5 When SingTel's and the Requesting Licensee's plant is damaged by a Third Party at the same location, SingTel has priority over the Requesting Licensee to work in SingTel's fibre cable and its associated facilities.
- 9.6 SingTel is not responsible for the maintenance of the Requesting Licensee patch cord and its associated equipment.
- 9.7 The technical information relating to the Wholesale Dark Fibre Service is contained in Annex 7A.1.

10. ACCESS AND APPROVALS REQUIRED

- 10.1 If an end or ends of the Wholesale Dark Fibre Service is located at a SingTel site, the Requesting Licensee must obtain access to that site under Schedule 8 or as otherwise agreed for the purpose of locating its equipment at that site.
- 10.2 If an end or ends of the Wholesale Dark Fibre Service are to be or are located at a Requesting Licensee site, the Requesting Licensee must:
- (a) provide SingTel with safe and reasonable access to the Requesting Licensee'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 Wholesale Dark Fibre 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.
- 10.3 If an end of the Wholesale Dark Fibre Service is to be or is located at a Customer site, the Requesting Licensee must obtain the permission of the Customer to allow SingTel to physically access the site and deal with equipment in the same manner as permitted at Requesting Licensee's sites under clause 10.2.
- 10.4 In addition to clauses 10.2 and 10.3, the Requesting Licensee must use its best endeavours to assist SingTel to access to the fibre cable and its associated facilities.
- (a) at the Requesting Licensee's cost, co-operating with SingTel so that SingTel is able to access the fibre cable and its associated facilities; and
 - (b) obtaining and maintaining any authorisation, permission, licence, waiver, registration or consent from any person necessary for SingTel to access fibre cable and its associated facilities.

11. PROTECTION AND SAFETY

- 11.1 The Requesting Licensee is responsible for the safe operation of its Network and shall be responsible for the safe operation of the Wholesale Dark Fibre Service and its

equipment and shall, so far as reasonably practicable, take all necessary steps to ensure that the Wholesale Dark Fibre Service use and its equipment:

- (a) does not endanger the safety of any person, including the employees, contractors, customers or third persons;
- (b) does not damage, interfere with or cause any deterioration in the operation of SingTel's Network;
- (c) does not jeopardise the integrity or confidentiality of Communications within the SingTel's Network; or
- (d) does not threaten the security and accessibility of SingTel's Dark Fibre.

- 11.2 The Requesting Licensee must comply with SingTel's standard operating procedures in relation to the use of the Wholesale Dark Fibre Service, as amended by SingTel from time to time.

12. PERMITS, LICENSES AND APPROVALS

- 12.1 If it is necessary to obtain any permit, approval or license from any person, governmental, regulatory or relevant authority in relation to work to be performed by the Requesting Licensee or by SingTel under this Schedule, the Requesting Licensee must obtain such permit, approval or license.

13. REQUESTING LICENSEE RIGHTS

- 13.1 The approval and provision of the Wholesale Dark Fibre Service does not vest in the Requesting Licensee any right, title or proprietary interest in the Dark Fibre.
- 13.2 The Requesting Licensee must not grant a third person a right to use the Wholesale Dark Fibre Service to which the Requesting Licensee has been granted under this Schedule.

14. TERM OF SUPPLY

- 14.1 The term of supply of a Wholesale Dark Fibre Service shall commence on the date of Final Approval and shall continue until the date being 18 months after the date of approval of this RIO Agreement.

15. SUSPENSION

- 15.1 SingTel may suspend the supply of the Wholesale Dark Fibre Service until further notice if:

- (a) in the reasonable opinion of SingTel, it is necessary to suspend the supply of the Wholesale Dark Fibre Service in order for SingTel to carry out repair or upgrading of any equipment or facility forming part of the Dark Fibre; or
- (b) the supply of the Wholesale Dark Fibre Service is having, or is likely to have, an adverse network impact on SingTel; or
- (c) the Requesting Licensee or any of the Requesting Licensee's Customers do anything, or allow anything to be done, which in SingTel's reasonable opinion may jeopardise the Dark Fibre.

16. TERMINATION

- 16.1 SingTel may immediately terminate the supply of a Wholesale Dark Fibre Service if:

- (a) the Requesting Licensee is no longer an FBO which supplies wireline or broadband services;
- (b) the Requesting Licensee is in breach of this Schedule and such breach remains unremedied for a period of five (5) Business Days after receiving notice from SingTel to do so;
- (c) in SingTel's reasonable opinion, the Requesting Licensee is using the Wholesale Dark Fibre Service in contravention of an applicable law, licence, code, regulation or direction;
- (d) the Requesting Licensee's use of the Wholesale Dark Fibre Service is having an adverse Network impact on SingTel;

- (e) the Requesting Licensee's Wholesale Dark Fibre Service is used for a purpose other than for the purpose contemplated under clause 1.1;
- (f) the Requesting Licensee abandons the Wholesale Dark Fibre Service;
- (g) the Dark Fibre has become unsafe or unsuitable for its purpose;
- (h) SingTel's right to own, maintain or operate the Dark Fibre is revoked or terminates or expires; or
- (i) the Requesting Licensee does or allows anything to be done which in SingTel's reasonable opinion may jeopardise the Dark Fibre or the SingTel Network.

16.2 If during the term of supply of the Wholesale Dark Fibre Service the Dark Fibre is:

- (a) no longer in use by the Requesting Licensee;
- (b) no longer suitable for use in SingTel's opinion; or
- (c) no longer available to be used as determined by SingTel;

three (3) months' prior notice may be given by SingTel to the Requesting Licensee for termination of the supply of the Wholesale Dark Fibre Service.

16.3 SingTel may give the Requesting Licensee no less than six (6) months' notice at any time during the term of supply of the Wholesale Dark Fibre Service because of the closure of a SingTel co-location site at which the Wholesale Dark Fibre Service terminates. The Requesting Licensee shall bear its own cost associated with the closure of the SingTel site and the termination of the supply of the Wholesale Dark Fibre 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.

17. EXPIRY OF TERM

17.1 Upon expiry or termination of the supply of a Wholesale Dark Fibre Service, the Requesting Licensee must have discontinued the use of the Wholesale Dark Fibre Service within twenty (20) Business Days of expiry or termination.

17.2 Where the Requesting Licensee fails to discontinue the use of the Wholesale Dark Fibre Service, SingTel shall disconnect the Wholesale Dark Fibre Service and the Requesting Licensee shall pay any costs associated with its disconnection.

17.3 Upon termination of the supply of Wholesale Dark Fibre Services, the following Charges shall be recovered from the Requesting Licensee:

- (a) charges for the remainder of the term of the Wholesale Dark Fibre Service;
- (b) outstanding pro-rata site preparation charges.

17.4 If this Schedule or Agreement is terminated for any reason, any supply of Wholesale Dark Fibre Service is also terminated.

18. SUB-LICENSING

18.1 The Requesting Licensee must not assign its rights in respect of or sub-let the use of the Wholesale Dark Fibre Service provided under this Schedule.

ANNEX 7A-1 TECHNICAL INFORMATION OF DARK FIBRE

1. **High Loss** – Data errors experienced during data transmission. Threshold Level - 25 dB at 1310nm from point to point.
2. **Fibre Discontinuity** – Data errors experienced due to fibre break or cut.

3. **Technical Specification :**

- (i) Single mode fibre is used.
- (ii) In accordance to ITU-T Recommendations G.652.
- (iii) Attenuation Co-efficient:

The attenuation co-efficient of the single-mode optical fibre shall be less than 0.4dB/km at 1310 nm wavelength. The attenuation co-efficient of the fibre operating at 1550 nm wavelength shall be less than 0.3dB/km. An attenuation co-efficient function of operating wavelengths is in the region from 800 - 1600nm for single mode fibre. The peak attenuation co-efficient in the OH absorption band in the region of 1380nm shall not exceed 1dB.

- (iv) Fibre Dispersion:

Chromatic Dispersion Co-efficient - The maximum chromatic dispersion co-efficient in the wavelength region from 1285nm to 1330nm shall be less than 3.5 ps/nm.km. The maximum magnitude of the total dispersion co-efficient at 1550nm wavelength shall be less than 18 ps/nm.km.

ANNEX 7A-2 FAULT RESTORATION PROCEDURE FOR DARK FIBRE

1. COMMON FAULT DESCRIPTION

Fault Type	Description
High Loss	a) Termination Fault at Requesting Licensee premise b) Termination Fault at SingTel Telephone Exchange c) Termination Fault at Fibre Node (Building MDF)
Fibre Discontinuity	a) Fibre breaks at Requesting Licensee premise b) Fibre breaks at SingTel Telephone Exchange c) Fibre breaks at Fibre Node (Building MDF) d) Fiber breaks outside building

Note: Termination Faults include but not limited to Connector fault, Patch-cord fault, Coupling problems, pigtails, etc.

2. AVERAGE SERVICE RESTORATION

Fault Description	Average Restoration Time	
	Office Hours	After Office Hours
High Loss	6 Hours	8 Hours
Fibre Discontinuity	8 Hours	12 Hours

3. CHECK LIST FOR FAULT REPORTING

Items	Description / Remarks
Identification of faulty segments	Fault report should identify the segment of the suspected dark fibre. 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.
High Loss Fault	To provide the Loss figure and the type of measurement.
Contact person	To provide contact person name and contact number for purpose of fault updates.
Access for SingTel staff	Security clearance for SingTel staff into Requesting Licensee's premises for the purpose of fault isolation.
Fault Management Centre (FMC)	Tel: 1800-7880022

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