



PUBLIC INQUIRY REPORT
Review of Access Pricing

14 December 2012

This Public Inquiry Report was prepared in fulfilment of Sections 61 and 65 of the Communications and Multimedia Act 1998.

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ABBREVIATIONS AND GLOSSARY

2G	Second Generation mobile network standard (and service)
3G	Third Generation mobile network standard (and service)
ACCC	Australian Competition and Consumer Commission
Access List	The list of facilities and services determined by the SKMM under Chapter 3 of Part VI of the CMA, in respect of which the Standard Access Obligations apply
BRAS	Broadband Remote Access Server
BTS	Base Transceiver Station
CAPM	Capital Asset Pricing Model
CMA	Communications and Multimedia Act 1998
DSL	Digital Subscriber Line
EBITDA	Earnings before interest, taxes, depreciation and amortisation
eNode B	Evolved Node B (LTE equivalent of a Node B and RNC)
FAC	Fully Allocated Cost
FTR	Fixed (voice) termination rate (or price)
GSM	Global Standard for Mobile (see also 2G)
HSBB	An IP-based network capable of providing services of at least 10 Mbps. For the avoidance of doubt, High-Speed Broadband Network in the Access List includes but is not limited to the "high-speed broadband network" specified in the Ministerial Direction on High-Speed Broadband and Access List, Direction No 1 of 2008
ITU	International Telecommunication Union
IP	Internet Protocol
IPTV	Internet Protocol Television
LRIC	Long-Run Incremental Cost
LTBE	Long-term benefit of end users
LTE	Long-Term Evolution, a mobile network standard
MCMCA	Malaysian Communications and Multimedia Commission Act 1998
MEA	Modern Equivalent Asset
MMS	Multimedia Message Service
MSA	Mandatory Standard on Access
MSAP	Mandatory Standard on Access Pricing
MTR	Mobile (voice) termination rate (or price)
NGN	Next Generation Network
Node B	A BTS in a 3G mobile network
PI Paper	Public Inquiry Paper
PI Report	This Public Inquiry Report

POI	Point of Interconnection
PPIT	<i>Persatuan Penyedia Infrastruktur Telekomunikasi Malaysia</i> (Telecommunications Infrastructure Providers Association of Malaysia)
PSTN	Public Switched Telephony Network
RNC	Radio Network Controller
QoS	Quality of Service
SBC	State Backed Company
SDH	Synchronous Digital Hierarchy
SKMM	Malaysian Communications and Multimedia Commission (<i>Suruhanjaya Komunikasi dan Multimedia Malaysia</i>)
SMS	Short Message Service
TRX	Transmit-Receive Antennas
TSoIP	Telephone Service on Internet Protocol
TSLRIC	Total Service Long-Run Incremental Cost
TSLRIC+	TSLRIC with mark-up for common business costs
USP	Universal Service Provision
VoD	Video on Demand
VoIP	Voice Over Internet Protocol
WACC	Weighted Average Cost of Capital
WiMAX	Worldwide Interoperability for Microwave Access

SUMMARY OF SKMM’S FINAL VIEWS ON ACCESS PRICING

For this Public Inquiry, the SKMM has undertaken detailed calculation of cost-based prices for all facilities and services on the Access List. The proposed prices and the costing methodologies used to calculate them were fully described in the PI Paper (issued on 1 October 2012). The Public Inquiry also canvassed the need for regulated prices and set out the SKMM’s principles used in setting access prices.

The PI Paper set out the SKMM’s preliminary views on access pricing and invited comments in response to specific and general questions. After consideration of the submissions received in response to the PI Paper, the following table summarises the SKMM’s reasoning and final views set out in this PI Report.

Table 1: Summary of SKMM’s final views

Service	SKMM’s final view
Fixed Network Origination Service	Price regulation. Separate prices for IP-based origination.
Fixed Network Termination Service	Price regulation. Separate prices for IP-based termination.
Mobile Network Origination Service	Price regulation for mobile and WiMAX voice services
Mobile Network Termination Service	Price regulation for mobile and WiMAX voice services
Interconnect Link Service	Price regulation based on transmission prices
Wholesale Local Leased Circuit Service	Price regulation based on transmission prices
Infrastructure Sharing	No price regulation

Service	SKMM's final view
Domestic Connectivity to International Services, specifically connection services to the submarine cable system	Price regulation based on transmission prices and co-location facilities
Network Co-Location Service	Price regulation for access to physical space provided by Network Service Providers No price regulation for other co-location prices
Full Access Service	No price regulation
Line Sharing Service	No price regulation
Bitstream Services, including (a) Bitstream with Network Service and (b) Bitstream without Network Service	No price regulation
Sub-loop Service	No price regulation
Digital Subscriber Line Resale Service	No price regulation
Digital Terrestrial Broadcasting Multiplexing Service	No price regulation. [Not included in current cost models.]
Wholesale Line Rental Service	No price regulation
HSBB Network Service with QoS HSBB Network Service without QoS	No price regulation
Transmission Service	Price regulation of common transmission types

1. INTRODUCTION

1.1 Public Inquiry process

In its Public Inquiry Paper on Review of Access Pricing (**PI Paper**) released on 1 October 2012, the SKMM detailed the approach and methodology it proposed to adopt in this Public Inquiry:

- (a) to determine which facilities and services on the Access List should be subject to *ex-ante* price regulation;
- (b) to determine cost-based prices for each facility or service on the Access List; and
- (c) to set cost-based prices for some facilities and services on the Access List.

The SKMM noted that under section 55(1) of the *Communications and Multimedia Act 1998 (CMA)*, the SKMM may, from time to time, make a determination on any matter specified in the CMA. The relevant matter in this Public Inquiry is access to services under Part VI, Chapter 3 of the CMA.

In consideration of the long-term consequences of access regulation, the SKMM adopted for this Public Inquiry the widest possible consultative approach under the legislation in order to obtain maximum industry and public impact. This approach was also designed to promote certainty and transparency in the exercise of the SKMM's powers.

The PI Paper set out the SKMM's preliminary views of which facilities and services should be subject to price regulation and, where relevant, the proposed prices for the period 2013-2015. The PI Paper invited comments on the appropriateness of setting the proposed prices and on the methodology used to calculate these prices. The PI Paper specifically sought comment on 33 issues or questions.

The PI Paper explained:

- (a) the legislative context and purpose of conducting the Public Inquiry;
- (b) the scope of the Public Inquiry;
- (c) the proposed outputs of the Public Inquiry; and
- (d) the process of the Public Inquiry.

1.2 SKMM's legislative obligations

Part VI of the CMA contains provisions on economic regulation including access to services. Section 149 within Part VI requires access providers to provide access to facilities and services on reasonable terms and conditions, which, in SKMM's view, include the prices that an access provider sets.

In addition to Part VI, Part VIII (section 198) of the CMA contains provisions on consumer protection including the following principles on rate setting:

- rates must be fair and, for similarly situated persons, not unreasonably discriminatory;
- rates should be oriented toward costs and, in general, cross-subsidies should be eliminated;
- rates should not contain discounts that unreasonably prejudice the competitive opportunities of other providers;
- rates should be structured and levels set to attract investment into the communications and multimedia industry; and
- rates should take account of the regulations and recommendations of the international organisations of which Malaysia is a member.

As explained in the PI Paper, the SKMM views that it is required to undertake a Public Inquiry under section 55 of the CMA in order to set prices for facilities or services on the Access List because determination of these prices is very likely to be of significant interest to all sectors of the economy, including end-users of communications services, and providers and potential providers of these services.

The SKMM is now required to make any determinations arising out of this Public Inquiry no later than 29 December 2012, which is 45 days after the close of public comments on the PI Paper. The SKMM proposes to issue a new Commission Determination that will reflect the SKMM's final views expressed in this PI Report in respect of access pricing for the period 2013-2015 for some of the facilities and services in the Access List.

1.3 Consultation process

The SKMM has consulted widely and openly with all interested stakeholders during this Public Inquiry, including:

- (a) consultations with a broad range of licensees prior to the release of the PI Paper, as set out in Annexure 1 to the PI Paper;
- (b) publication of the PI Paper on 1 October 2012 and a request for comment, including publicity in relation to the same in the media and on the SKMM website;
- (c) making available on request public versions of the economic cost models and cost-of-capital parameters used in determining the proposed prices in the PI Paper;
- (d) clarifications in response to stakeholders in relation to specific items raised in the PI Paper during the consultation period; and
- (e) conducting a public clarification session on the overall Public Inquiry and specific questions on the PI Paper. The public clarification session was held in the SKMM auditorium in Cyberjaya at 9.30 am on Wednesday, 24 October 2012.

1.4 Submissions Received

At the close of the Public Inquiry period at 12.00 noon on 14 November 2012, the SKMM received written submissions from the following parties.

Table 2: Summary of written submissions received

No.	Submitting party	Documents
1.	Celcom	1 submission (39 pages)
2.	Deol & Gill	1 submission (23 pages)
3.	DiGi	1 submission (21 pages)
4.	Fiberail	1 submission (20 pages)
5.	Fibrecomm	1 submission (7 pages)

No.	Submitting party	Documents
6.	Jaring	1 submission (2 pages)
7.	Maxis	1 submission (85 pages)
8.	Packet One	1 submission (26 pages)
9.	PPIT	1 submission financial confidential (43 pages) 1 submission financial non-confidential (43 pages) 1 submission legal and regulatory (15 pages) 1 list of annexures (1 page) Annexure A (14 pages) Annexure B (58 pages) Annexure C i (2 pages) Annexure C ii (5 pages) Annexure D (19 pages) Annexure E (36 pages) Annexure F (33 pages) Annexure G (26 pages) Annexure H (10 pages)
10.	Sacofa	1 submission including confidential section (52 pages) 1 submission non-confidential (51 pages)
11.	TIME	1 submission (26 pages)
12.	Telekom Malaysia	1 submission confidential (112 pages) 1 submission non-confidential (112 pages) 1 reference mobile model (6 workbooks) 1 mobile model user guide confidential (30 pages)
13.	U Mobile	1 submission (42 pages)
14.	YTL	1 submission (11 pages)

Having thoroughly reviewed and assessed the submissions received on the PI Paper against its own preliminary views, the SKMM now presents this PI Report within the 30-day requirement of the closing date of submissions, as stipulated under section 65 of the CMA.

The SKMM would also note that some issues raised in the submissions are outside the purview of this Public Inquiry. These issues include:

- The need for an efficient resolution mechanism for disputes regarding commercial negotiations on access or with regard to non-price terms and conditions despite the existence of Guidelines for Dispute Resolution. This issue was raised by Deol & Gill. The SKMM would like to clarify that in addition to the Guidelines for Dispute Resolution, the MSA contains Dispute Resolution Procedures which relates to any dispute that may arise in connection with the supply of facilities and services to which the MSA applies.
- The need for further review of the facilities and services on the Access List (Deol & Gill).
- Non-price terms and conditions for access services, including quality of service delivered, technical standards and payment terms (Deol & Gill), and non-price terms and conditions for infrastructure sharing, as an alternative to access pricing (PPIT).
- Possible Government funding or loan schemes to bring greater stability to capital markets in the face of future price uncertainty (Sacofa).
- The possibility of the SKMM allowing time for additional comments on amendments made as a result of the PI process (Celcom) or that the thirty days provided in the CMA for the SKMM to publish a final report was too short to permit the SKMM to consider fully the submissions made in the Public Inquiry before making a final decision (Maxis). The SKMM would like to clarify that under section 55 of the CMA, the SKMM must make any determination arising from the Public Inquiry within 45 days of the close of submissions to the PI Paper.

1.5 Structure of this PI Report

The remainder of this PI Report is structured broadly to follow the PI Paper to provide a consistent context for the SKMM's specific questions for comment. The 33 numbered questions in the PI Paper are duplicated in each section with a summary of the comments received (in alphabetical order of the submitting parties). The SKMM then sets out the rationale of its final views on each issue:

Section 2: Principles in setting Access Prices

Section 3: Methodologies for determining cost-based prices

Section 4: Fixed termination and origination services

- Section 5: Transmission-related services
- Section 6: Fixed access services
- Section 7: Bitstream services
- Section 8: HSBB services
- Section 9: Mobile services
- Section 10: WiMAX services
- Section 11: Infrastructure Sharing services
- Section 12: Co-location services
- Section 13: Next steps

2. PRINCIPLES IN SETTING ACCESS PRICES

2.1 Overview

Part B of the PI Paper was concerned with the general principles relevant to regulatory pricing. After some brief background in chapter 3, chapter 4 of the PI Paper set out the general guidelines to be used by the SKMM in determining which services should be subject to *ex-ante* price regulation and the criteria by which regulated prices should be set. The SKMM sought comment on these issues.

In addition, chapter 4 of the PI Paper proposed a time horizon of 3 years for the prices and described the possible use of glide paths in moving to fully economic prices. It also canvassed the potential use of the cost model results in arbitrating future disputes on access pricing.

2.2 Summary of submissions received

There were two submissions with general comments regarding the setting of access prices.

Fiberail agreed that prices should be set to benefit the long-term interests of end users but was concerned that the SKMM should do nothing to hinder the growth of the industry and especially should not favour one stakeholder alone.

Deol & Gill questioned the SKMM's legal basis for setting access prices. In Deol & Gill's view, only the Minister had the power under the CMA to set access prices and the SKMM can only recommend access prices to the Minister.

Question 1

The SKMM seeks comments on whether the criteria for *ex-ante* determination of access prices remain appropriate.

Respondents were split on the appropriateness of *ex-ante* regulation for access pricing. Some viewed that commercial negotiations between service providers should be given priority. Telekom Malaysia said commercial negotiation could achieve favourable outcomes in a timely fashion or more rapidly than regulatory intervention could. Others felt that the existence of both criteria (barriers to entry and absence of trend towards effective competition) should not be an automatic trigger for regulation. Maxis felt that regulation should be targeted at operators with significant market power, while Celcom

and PPIT were of the opinion that a different approach should be taken for some services with different circumstances, such as co-location and infrastructure sharing services.

Others were of the view that *ex-ante* regulation remains appropriate. DiGi said since *ex-post* remedies may not be sufficient in a fast moving telecommunications market, there remains a need for *ex-ante* regulation. YTL felt that, where there continues to be a lack of competition for certain services, commercial negotiation will not result in competitive prices for smaller and new operators that do not have bargaining power.

Celcom stated that the criteria are appropriate, but that for some access services, such as co-location and facilities access, it may be necessary for the SKMM to require the service to be provided in advance and the negotiated or arbitrated price to be backdated to the commencement of the service.

Deol & Gill suggested that, for many services, the SKMM's proposal to set prices was not *ex-ante*, but rather after significant development of the market for these services. Deol & Gill also believed that there was a lack of hard data to indicate whether or not access pricing was effective. To this end, Deol & Gill suggested the following additional criteria for pricing intervention:

- when there is a lack of access to information critical for assessing costs and determining whether or not proposed prices are reasonable;
- when there is demand for innovative and competitive services, to provide greater certainty for new entrants;
- when there is the possibility to create opportunities for new service providers to deliver service offerings that was provided by a select group of operators;
- when there is limited regulatory guidance on the costing methodology to be used by the SKMM in access disputes, leading to uncertainty for operators and potential new competitors; and
- when there is no mechanism for the speedy resolution of access disputes.

While DiGi noted the SKMM's rationale to maintain the current access price regime to ensure the provision of key wholesale services in instances where there are high barriers to entry or bottleneck conditions in the provision of such services, it also noted that facilities and services are listed on the Access List where it has been established that

providers have the potential to set high prices, and hence it is appropriate that access prices are regulated for these facilities and services.

DiGi considered that there remains a need for *ex-ante* determination of access prices to ensure that facilities and services are competitively, fairly and reasonably priced to promote the LTBE. DiGi agreed that *ex-post* intervention may not provide sufficient remedy in a fast moving communications industry and, in most cases, will result in prolonged processes, which may jeopardize the national policy objectives for the communications and multimedia industry.

Fiberail noted that the European regulators had added a third criterion, in addition to the two proposed by the SKMM in the PI Paper, for assessing whether *ex-ante* regulation was appropriate. This third criterion was that *ex-post* regulatory controls are unlikely to be sufficient to address concerns associated with market dominance.

Fiberail suggested that *ex-post* intervention may be sufficient in many cases. It proposed that most access seekers were in a powerful position with regard to contract negotiations. Fiberail indicated that setting prices *ex-ante* could distort the market in an unfavourable way that could limit growth. Given this possibility, the SKMM should only set price controls in mature markets.

Fibrecomm proposed that the SKMM should also take account of changes in market outlook and technology updates in considering the need for *ex-ante* determination of access prices. The SKMM, in Fibrecomm's view, should consider carefully the relative market strengths of access providers and access seekers in making its determinations.

Jaring supported the setting of maximum access prices, especially for call termination and origination and leased lines, in order to overcome dominance by access providers.

Maxis stated that the two criteria used by the SKMM, namely the presence of high barriers to entry and absence of a trend towards effective competition, are suitable for defining relevant markets where there is a likelihood of market requiring *ex-ante* regulation. Maxis highlighted, however, that, for a market to potentially qualify for *ex-ante* regulation, the barriers to entry must be non-transitory and permanent. Maxis noted that these circumstances do not, by themselves, make a sufficient case for *ex-ante* regulation, because they do not prove the presence (or threat) of anti-competitive actions and that, for the SKMM to unequivocally demonstrate the need for *ex-ante* regulation in a given market, it would be advisable to align with international practice and implement a process to establish the presence or threat of market failure through the concept of significant market power or the CMA equivalent of "Dominance".

Packet One was of the opinion that the criteria for *ex-ante* determination of access prices remained appropriate to provide commercial certainty in the market as well as aid commercial negotiations.

PPIT submitted that *ex-ante* regulation of prices could undermine infrastructure investment and quoted academic support for this contention. In any case, it saw no barriers to entry for infrastructure sharing services.

PPIT proposed that *ex-ante* price regulation should not apply to SBCs as they had already commercially negotiated, pricing is transparent, their competitors lacked barriers to entry and, in any case, regulation of access pricing would not be a long-term solution for competition issues.

Sacofa believed that self-regulation had already worked in Malaysia, citing evidence of infrastructure growth and the growth in service providers, and that price regulation was not necessary. In any case, Sacofa believed that the SKMM should not set prices without a test showing clear market failure. It quoted the European practice of assessing the need for *ex-ante* regulation on the basis of three criteria, including the criterion that *ex-post* regulatory controls will be insufficient to address concerns of market dominance.

Telekom Malaysia, while preferring commercially negotiated outcomes, noted that the SKMM's criteria were standard among regulators for enduring bottlenecks. However, Telekom Malaysia noted that the criteria should be applied to specific markets and it was therefore important for the SKMM to regularly assess their applicability to the relevant markets.

TIME accepted that, in principle, the criteria for setting prices remained necessary and sufficient for the regulatory regime but expressed doubts about the effects on competition of setting access prices. In particular, TIME suggested that the SKMM should avoid setting regulated access prices during the introductory phases of new technologies and in geographical areas where competition exists among access providers.

Question 2

The SKMM seeks comments on whether the pricing guidelines are appropriate and whether there are any other criteria that should be considered.

There was general agreement that the pricing guidelines are appropriate; however, there were many suggestions for the SKMM to clarify specific aspects of them.

Celcom noted that it might be useful for the SKMM to adopt a different standard of and definition for efficiency that is not entirely linked to competition.

DiGi agreed with the SKMM's proposed pricing principles. DiGi submitted that, while the promotion of economic efficiency as a guiding principle is appropriate to motivate competition in the industry, it is of vital importance that the data used to derive these levels of pricing should reflect reasonable costs to ensure continuous interest for investment, and re-investment in the technology necessary to provide these services, as well as fair return on investment.

Fiberail proposed that the SKMM should limit its interventions on access pricing to well established or bottleneck facilities and services. In other regards, Fiberail proposed criteria that are consistent with the SKMM's approach.

While generally supporting the pricing guidelines, Fibrecomm noted that the issues of appropriate costs to be taken into account was an uncertain issue and different for each provider. Fibrecomm believed that the promotion of economic efficiency may be too hypothetical to be used for guidance and the SKMM needed to balance the needs of both access seekers and access providers. Fibrecomm noted that the cost estimates should take account of profitability of providers.

While supporting the guidelines, Jaring suggested that there should also be determinations by the SKMM to support price discounts for high volumes or long contracts (greater than 1 year).

Maxis noted that, in setting pricing for *ex-ante* regulated services, the SKMM must send the appropriate forward-looking signals (e.g. promote innovation, deploy more infrastructure, buy from existing infrastructure providers) and ensure the recovery of efficiently incurred costs through carefully considering potential inefficiencies and the existence of stranded assets.

Maxis noted that in its report on the Access List Public Inquiry in 2008, the SKMM took the approach not to mandate copper unbundling of any sort in areas where the HSBB network is being deployed. Maxis noted that, as households and businesses in HSBB areas transition to HSBB services, the utilisation of the legacy assets will fall. If these redundant (or 'stranded') assets in the HSBB provider's network were to be included in the cost base for regulated services, it would lead to excessive prices being borne by

access seekers outside HSBB areas, where Bitstream and copper line access remain possible (and indeed the only path to competition).

Maxis stated that, for access services on the HSBB network, the Government's grant to the HSBB provider cannot be disregarded in the determination of access prices, and the government subsidy, which is structured as a grant, has significantly reduced the risks associated with the HSBB provider's early investment in the project. Maxis stated that the SKMM must ensure that the cost of financing for the HSBB network not only excludes the value of assets represented by the government grant, but also reflects the lower risk profile of the investment.

As a small fixed operator, Maxis was concerned that the fixed termination rates proposed are now higher than the rate-regulated PSTN local call of 4 sen/min (subject to the first two minutes being charged at 8 sen). Maxis' view was that the adoption of efficiency standards ought to result in outcomes that are economically efficient for expansion of alternative service delivery.

Packet One emphasised that the SKMM should uphold the technology neutrality principle of the CMA in determining the Access Pricing. Packet One stated that the Access Pricing should be designed to encourage further advancement in technology and service convergence and, in addition, the pricing guideline should also be capable of promoting improvement of the QoS by the service providers to the customer.

Sacofa suggested that the promotion of "social responsibilities", such as the support of indigenous populations, should also be considered.

While Telekom Malaysia agreed to the pricing guidelines described by the SKMM, it believed that the SKMM had not applied appropriate efficiency standards in all cases or had applied them inconsistently between fixed and mobile models. Telekom Malaysia also suggested that, as determining efficiency in the building-block methodology was difficult, the methodology was inconsistent with the SKMM's pricing guidelines.

TIME noted that competition in Malaysia had broadened due to the entry of more licensees but that competition had not deepened materially, with similar service offerings from providers of leased lines, broadband services and voice service. TIME believed that the SKMM had not fully taken stock of the commercial incentives and market behaviour of some licensees to protect their network domains and to undermine, if possible, the retail competitiveness of others. TIME suggested that the SKMM should analyse the effects of setting access prices and should strongly enforce the competition-specific provisions of the CMA.

TIME also suggested that the SKMM could adopt a “ladder of investment” regulatory principle, distinct from cost orientation. This would permit the SKMM to set asymmetric prices for a short period (no more than 3 years) to support the growth of small operators and thereby promote competition. TIME believed that such an approach would be consistent with the general competition practices described in the explanatory notes to the CMA. TIME noted instances in other jurisdictions where asymmetric prices were allowed.

Question 3

The SKMM seeks comments on the appropriateness of setting regulated prices for the period up to and including 2015.

Most respondents were of the view that the 3-year period for regulated prices provides business certainty and is in line with business planning cycles. Others, however, believed that the 3-year timeframe should start from 2014 onwards or should extend until 2016 since many parties would have already secured contracts and would not be able to make revisions to accommodate 2013 regulated prices. YTL was of the view that the regulatory period should be longer.

Celcom agreed with the pricing period, but noted that this should be considered the upper limit and the SKMM should explicitly reserve the option to intervene before 2015 if the situation warrants.

Deol & Gill argued that operators will be unable to take advantage of new prices in 2013, because contract arrangements were already in place, and suggested that prices should be set for the period 2013-2016.

DiGi agreed with the SKMM that a 3-year period is appropriate as technology changes over a longer period may cause increased variations in costs and investments over and above market factors and that this was also consistent with the business planning cycle of operators.

Fiberail commented that setting prices for 2013 would be “hasty”, where operators have already agreed contracts where prices have already been set for 2013. Fiberail argued that any revision of prices for 2013 should apply to new supply contracts only and not affect commercially agreed contracts made prior to the SKMM’s Determination of new prices.

Fibrecomm supported the contention that the period 2013-2015 was suitable and reasonable for setting regulated prices.

Jaring agreed that new price regulation was overdue. It particularly saw the need for price regulation that would encourage the movement of services from E1 rates to IP-based leased lines.

Maxis welcomed the SKMM's decision to issue regulated prices for the proposed regulatory period up to and including 2015; emphasised the need for structured regulation; and encouraged the SKMM to avoid future periods when regulations are allowed to expire. Furthermore, Maxis commended the SKMM for the much improved transparency of the ongoing process compared to the 2005 costing, despite the lack of information on some key areas such as fixed costing and HSBB. Maxis also considered that the public clarification meeting did not provide sufficient details and information to operators, and therefore there remained areas of uncertainty in the proposed approach described by the Public Inquiry. Maxis considered the absence of written responses to their questions was an issue.

Maxis welcomed assurances from the SKMM that future reviews will be launched such that the preparatory work done by the SKMM, including the Public Inquiry process, processing of stakeholder responses and drafting of final conclusions takes place prior to the expiration of the regulatory period under consideration in this Public Inquiry (i.e. that the next market analysis process concludes before the end of December 2015).

Packet One agreed with the SKMM that regulated prices are set appropriately for facilities and services on the Access List for the period 2013 to 2015, that is 3 years. Packet One noted that three years is sufficient in providing regulatory certainty for network operators, service providers and facility providers and that the duration is also in line with the business planning cycles.

PPIT noted that commercial agreements by the SBCs were for 10 years and that an approach to setting prices for the proposed period would add to business risk for the SBCs.

PPIT did not support the proposed time period. On the one hand, it would be difficult for SBCs to adjust their prices quickly; on the other hand, the period was too long, because demand can change rapidly and changes in antenna technology add to uncertainty of financial return. The SBCs may be unable to recover increased costs in the regulatory period, thereby adding to commercial risk.

Sacofa indicated that the proposed period to 2015 was too short compared to its investment cycle and the lifetime of its assets. It sought pricing stability for a longer period in order to secure continued funding.

Telekom Malaysia agreed that the period proposed represented a pragmatic approach. It suggested that some forecasts over this period – particularly those for HSBB and mobile services – would be more uncertain than others. It also noted that some regulators in Scandinavia update their cost models more often than every 3 years.

TIME agreed with the appropriateness of the period.

Question 4

The SKMM seeks comments on the appropriateness of using glide paths and the method by which the glide path has been calculated.

Mixed responses were received. Telekom Malaysia was concerned about the way in which the glide paths had been used to set the proposed prices. Maxis thought that the glide paths should be set in a different manner. While some responses supported the use of glide paths, U Mobile thought their use was not in the long-term interests of end users, nor did it support the efficient allocation of resources. YTL felt the use of a glide path was not in the interests of smaller operators.

Celcom agreed with the way the SKMM has used glide paths in this access pricing review.

DiGi stated that, in principle, a glide path minimizes disruptions to the financial impact and hence business performance of the operators; and provides a gradual transition from the existing prices to new ones that are markedly different. DiGi noted that glide paths are used in a large number of countries.

Fiberail noted that new prices introduced in a short span of time could be very disruptive. It believed that an access provider should be able to recover its investment costs. Fiberail did not support the use of a glide path starting from prices in 2012 and reaching the cost-based price in 2015.

While Maxis had concerns over the appropriateness of regulating mobile access tariffs, Maxis supported a glide path approach to bridge the gap between existing tariffs and the final tariffs set by the SKMM, as this would soften the impact of the strong decrease in mobile termination revenue imposed by the SKMM. Maxis noted that, instead of using

linear interpolation, other regulators tended to define the target tariff in real terms and subsequently implement a geometric glide path with a constant percentage decline over time corrected for inflation with the slope of the curve set to RPI-x%, with x being the constant percentage decline in real terms.

Maxis' view on fixed access services was that setting a glide path on fixed services would be inappropriate in light of the prevailing near-monopoly in the fixed market. Maxis noted that the cost basis for determining the regulated rates must consider modern networks, and in particular must reflect the fact that Telekom Malaysia received significant Government subsidies to modernise its network, which Maxis expected would have resulted in highly efficient and low-cost carriage of voice services.

Maxis also noted that the SKMM must not target symmetry between fixed and mobile termination rates as an outcome, but instead must apply consistent input principles, which in many best-practice regimes do not result in symmetric termination rates between fixed and mobile.

Sacofa sought further guidance on the applicability of glide paths and believed there was insufficient empirical evidence on the matter.

Telekom Malaysia commented that glide paths should not be used to correct "anomalies" and that, if they are to be applied, they should be used consistently. Telekom Malaysia believed that the SKMM's proposals did not apply the glide paths consistently between services and noted, for mobile termination rates, the case in New Zealand, where large annual price declines were regulated. It argued that glide paths, if applied consistently, would apply for both fixed and mobile services. Telekom Malaysia believed that the cost results showed that it had been "subsidising" mobile operators through a high mobile termination rate and that there was no justification for the subsidy to continue.

Question 5

The SKMM seeks comments on the appropriateness of using the cost model results in arbitrating disputes over access pricing.

Views were divided on the issue of using cost model results to arbitrate disputes over access pricing. Those that agreed said the cost-based prices are reasonable boundaries to be used as a reference point during arbitration. Others cautioned that the disputed service must be modelled directly or that the SKMM should consider the nature of the dispute and review and adapt the models for evaluation. This was considered

particularly important for certain services such as co-location, which was seen as very site specific.

Celcom agreed with the general use of cost model results in assisting arbitration. However, in the case of access services such as co-location and facilities access, the model should be loaded with site specific data sets of the negotiating parties.

Deol & Gill commended the use of cost model results for arbitrating in notified access disputes but suggested there was a lack of a suitable resolution procedure.

DiGi stated that well-grounded cost-based regulated prices established for facilities and services on the Access List are reasonable boundaries to be used as a reference point during arbitration proceedings.

Fiberail indicated that commercial negotiations on access were generally influenced by the SKMM's proposed prices for services on the Access List and the likelihood of disputes was low. Fiberail thought that the arbitration of disputes should take account of the specific circumstances of each dispute and that the cost model results would be useful, if at all, only in the case of bottleneck facilities and services.

Fibrecomm believed that the cost model results alone should not be used in arbitrating disputes over access pricing. While the model result would be a guide, it would need to be supplemented with other information from operators in order to establish a relevant price.

Maxis, in principle, did not object to the SKMM adopting the cost models to resolving disputes over access pricing, provided the service at hand is modelled directly. Maxis, however, considered that the SKMM should ensure that it adequately considers the nature of the dispute and, where relevant, reviews and adapts the models where appropriate to evaluate the impact on access tariffs in line with the SKMM's statutory duties.

Maxis was concerned that some fixed prices already are higher than market reality, with the resulting concern of the applicability of the model in the first place. Maxis stated that the SKMM must also closely monitor access providers' retail prices to ensure that retail offers directly or indirectly (through bundling, discounts and rebates) do not foreclose others from competing effectively at a retail level by 'squeezing' the margin within which the access seeker has to operate. Maxis noted that margin squeeze tests should therefore be used in conjunction with the cost models during disputes to verify that access prices set via the cost models are non-discriminatory.

Packet One disagreed with the cost model being used in arbitrating disputes over access pricing in view of various providers' size and dominance of infrastructure. Packet One noted that the advocacy for cost models is often based on the assumption that this is the level at which effective competition would drive prices and that the cost model assumes that the latest technology is deployed throughout a network and this network benefits from the economies of scale associated with serving customers in a particular area. Packet One noted, however, that in the real world companies do not instantaneously replace all their facilities with every improvement in technology and a new technology that replaces existing technology may produce a significant decrease in asset prices. Packet One noted that the cost model fails to recognize this factor and will often lead to a significantly higher cost-based price.

PPIT noted that the PI Paper had conceded that the proposed prices for infrastructure sharing could not cater for all individual circumstances. PPIT highlighted the variations in operational costs between States, in tower tenancy rates, in construction and installation costs and in space utilization, leading to the conclusion that the calculated prices would not be useful in arbitrating disputes.

Sacofa believed that disputes should not arise but, if they did, they should be arbitrated on the basis of commercial agreements, not cost model results.

Telekom Malaysia supported in principle the notion of referring to cost model results in arbitrating disputes over regulated services. However, Telekom Malaysia believed there were concerns about accuracy of the specific costs models.

TIME agreed that the cost model results could be used in arbitrating disputes over access pricing.

2.3 SKMM's final views

The SKMM has carefully considered all the comments and issues raised by respondents and notes that the responses have assisted in clarifying the principles that should apply to the setting of access prices.

With regard to the general comments on the SKMM's process for setting access prices, the SKMM believes that it has always acted for the long-term benefit of end users and, in particular for the current exercise, has struck a balance between the needs of access providers and access seekers for the beneficial and efficient supply of telecommunications services.

Under section 104(1) of the CMA, the SKMM may determine a Mandatory Standard for any matter which may be the subject matter of a voluntary industry code. SKMM is of the view that access pricing is a matter which may be a subject matter of voluntary industry code. Therefore, SKMM has determined access prices based on Ministerial Direction issued under sections 7 and 104(3) of the CMA. As such, the SKMM asserts that it has legal power to set prices for facilities and services on the Access List.

2.3.1 Criteria for determination of prices *ex-ante*

The SKMM notes, firstly, that industry self-regulation through commercial negotiation is preferable in most cases. There are circumstances, however, in which commercial negotiation is unlikely to produce an outcome for the long-term benefit of end users and, in these circumstances, criteria for intervention by the SKMM is necessary.

After reviewing the comments on the need for clarity and precision, the SKMM has determined to clarify the criteria by noting the non-transitory nature of some conditions and to add a third criterion regarding the potential ineffectiveness of *ex-post* regulation. The circumstances in which the SKMM should intervene in the market through *ex-ante* regulation are then the following:

1. The presence of non-transitory high barriers to entry;
2. The continuing absence of a trend towards effective competition;
3. *Ex-post* regulatory controls are unlikely to be sufficient to address concerns regarding access to fair and reasonable access prices.

These criteria have been used in the remainder of the PI Report to determine when *ex-ante* regulated prices are appropriate.

Section 139 of the CMA provides that the SKMM may direct a licensee in a dominant position in a communications market to cease a conduct in that communications market which has, or may have, the effect of substantially lessening competition in any communications market, and to implement appropriate remedies. As such, implementation of any obligations on dominant operators works as *ex-post* obligation; hence, a study on dominance cannot be relied upon to impose *ex-ante* access pricing on dominant operators. Therefore, the SKMM has relied on Chapter 3 of Part VI and other provisions in the CMA and MCMCA to impose *ex-ante* obligations on all licensees, regardless of whether such licensees are in a dominant position or otherwise.

2.3.2 Pricing guidelines

The SKMM welcomes the substantial responses and reasoned arguments on this topic, which is closely linked to the issue of *ex-ante* regulatory intervention. The SKMM suggests that the calls for regulatory forbearance from some respondents – for example, the proposal that regulatory prices should not be set for new or growing services – are really concerns regarding the imposition of *ex-ante* regulation and the SKMM has reviewed them in that light. As described in the previous section, the criteria for intervention have been clarified and expanded. On Fibrecomm’s view that the cost estimates should take account of profitability of providers, the SKMM notes that the models do just that: they provide for a suitable return on investment that will continue to provide a return to equity holders and the payment of long-term debt.

The SKMM also notes the responses that emphasised that the access pricing guidelines should be fairly applied. In the final views expressed later in this PI Report, the SKMM has made changes to ensure that the guidelines are fairly and accurately applied. The further clarification sought by some providers is given with individual decisions on prices. As described in the PI Paper, the general access pricing guidelines remain as follows:

1. Appropriate cost recovery; and
2. Promotion of economic efficiency in investments.

2.3.3 Regulatory period

The SKMM notes the concern expressed by some respondents that the regulated prices may not be available to access seekers immediately in 2013. However, the SKMM intends to determine new prices as soon as possible.

The SKMM continues to believe that setting prices beyond 2015 would be open to great uncertainties. Further, the SKMM notes that a 3-year regulatory period is common in other jurisdictions. Among recent decisions using a 3-year regulatory period are those in the UK, Belgium, France, Hungary and South Africa. In line with international precedents, SKMM maintains its position to regulate prices from 2013 to 2015.

The SKMM is ready to intervene during this period if there are significant market changes and believes it is in a position to undertake a new round of price setting for the period beyond 2015 before the current period expires.

2.3.4 Glide paths

The SKMM notes the general support for using glide paths, where appropriate. It does, however, note the concern that glide paths were not consistently applied in its draft proposals and has used glide paths more extensively in its final decisions. While glide paths delay the introduction of fully cost-based prices, they provide greater stability for the industry.

The SKMM recognizes that there are several methods by which glide paths can be calculated but continues to believe that a linear glide path over a 3-year period is satisfactory. SKMM remains of the view that linear glide path is the most common approach and has been adopted by many regulators such as Belgium, Hungary, Jordan and South Africa.

2.3.5 Arbitration of disputes

The SKMM welcomes the responses regarding the use and relevance of the cost model results in arbitrating future pricing disputes. The SKMM continues to believe, however, that the cost models are a useful quantitative source of information on appropriate costs and should be consulted where relevant. In these circumstances, the SKMM will seek up-to-date or specific data, if necessary, as several respondents suggested.

3. METHODOLOGIES FOR DETERMINING COST-BASED PRICES

3.1 Overview

Chapters 5-7 of the PI Paper described the methodologies the SKMM was proposing to adopt in order to determine cost-based prices. The PI Paper sought comments on the structure and use of each methodology.

Chapter 5 of the PI Paper was concerned with the use of the Long-Run Incremental Cost (LRIC) approach to determining costs and prices. It proposed the continued use of Total Service LRIC with common cost mark-up (TSLRIC+) as the basis for setting prices for fixed and mobile origination and termination services. Within the TSLRIC+ approach, there are several options that can be chosen and the PI Paper described the options chosen by the SKMM.

Chapter 6 of the PI Paper proposed that a different costing approach was necessary for fixed access service pricing. It described the features of fixed access that led to a new approach and outlined the debate in Europe and elsewhere on the appropriate pricing of fixed access services. The chapter then went on to describe a "building-block" methodology that the SKMM proposed to use for the pricing of traditional fixed access and HSBB services.

Chapter 7 of the PI Paper indicated other service prices for which an alternative to the TSLRIC+ methodology should be used. These exceptions were for co-location and infrastructure sharing services and for one-time installation charges. For co-location and infrastructure sharing, the SKMM proposed to use a building-block methodology. For installation charges, the SKMM proposed to match them to the direct cost of efficient installation activities.

3.2 Summary of submissions received

Question 6

The SKMM seeks comments on whether the choices made (discussed in section 5.2 of the PI Paper) for TSLRIC models are appropriate.

Most agreed with the choices made for TSLRIC models but voiced concerns over the implementation. Telekom Malaysia suggested that the implementation of TSLRIC models had delivered results that are inconsistent with standard LRIC practices. Maxis voiced concerns over the lack of evidence of cost reconciliation or audit of Telekom Malaysia's

submission. It also believed that the choice of depreciation methods (straight line or tilted annuity) does not enable an estimate of the true LRIC of the services and overestimates costs in the early stages of take-up. YTL disagreed with the use of TSLRIC, suggesting that most other jurisdictions had moved away from the TSLRIC methodology.

Celcom agreed with the SKMM that the choices made for the TSLRIC models in this access pricing review are appropriate.

DiGi agreed that TSLRIC+ is an established best practice for the regulator to determine termination rates and that it is important that common costs are recovered with an acceptable margin in the provision of termination service. DiGi noted that the SKMM indicated that the proposed termination prices have been calibrated and reconciled with Malaysian operator data, and thus should reflect the appropriate forecast increases in cost.

DiGi also noted a range of benefits of TSLRIC stated by the ACCC, including that, by allowing efficient access providers to fully recover the costs of producing the service, it promotes the legitimate business interests of the provider of the service.

Fibrecomm generally supported the choices made for the TSLRIC models. It expressed concern, however, over the reliability of data, the suitability of the common business cost mark-up and the accuracy of the calibration and reconciliation processes. In all cases, Fibrecomm believed that data should be collected and used from all operators and expressed concern that costs would vary between operators.

Maxis was generally supportive of the SKMM's choice of TSLRIC models for fixed and mobile traffic services; however, it had reservations about the implementation carried out by the SKMM. Maxis' key concern was the asymmetry of information between the mobile model (where at least three providers contributed demand and cost data) and the fixed model, which is essentially populated with a single provider's data (which was incomplete) making it impossible to ensure the fixed network costs were efficient.

Maxis noted that this issue could be overcome by calibration and reconciliation, and suggested that confidentiality concerns could be addressed through either reconciling at the aggregate level or by utilising an independent auditor.

Maxis was also concerned over the SKMM's choice of depreciation and stated that neither straight-line nor tilted annuities are able to reflect the real-life pricing behaviour of capital-intensive businesses (who have to invest in advance of demand actually arising),

and that only an economic depreciation algorithm can capture this effect. Maxis claimed that the two effects of the choice of depreciation were:

- For mature services (e.g. mobile termination), tilted annuity and straight line depreciation will result in unit costs that are excessive in early years compared to what providers can charge, and insufficient in later years, so that the loss incurred in the early years cannot be fully recovered; and
- Conversely, for new services (e.g. HSBB services), where demand has not yet reached mature levels, applying a straight-line depreciation or annuity would artificially inflate unit costs, resulting in a cost above the access provider's retail pricing.

Sacofa agreed with the choice of a TSLRIC model for transmission services.

Telekom Malaysia agreed that, at face value, the choices made for TSLRIC models were common ones. It suggested, however, that the model calibration and reconciliation processes and the treatment of common costs were not standard and were inconsistent with standard LRIC practice.

TIME agreed with the choices made for the model.

Question 7

The SKMM seeks comments on whether an alternative costing methodology to LRIC is more appropriate for fixed access.

The responses to this question were mixed. Telekom Malaysia expressed the view that there is no basis to adopt an alternative approach to LRIC for costing fixed access services and pointed out that the only regulatory precedent is Australia. DiGi and Celcom agreed that an alternative to LRIC should be used. Maxis was concerned about the implementation of the alternative approach.

Celcom agreed with the SKMM that an alternative costing methodology for fixed access that has a reduced or no risk of over-recovery is appropriate.

DiGi agreed with the SKMM that an alternative costing methodology to LRIC should be used in circumstances where the principles of LRIC method could potentially result in the over-recovering of the full set of assets used to produce a service. DiGi noted that the fixed access network is an example that is installed once and used for a long time and

where investments by an alternative provider are unlikely. DiGi noted that, where the fixed subscriber base is on the decline, it is challenging to deploy the LRIC methodology and that the costs of capacity that becomes idle over time should not be allocated to the termination service. Finally, DiGi noted that the principle of LRIC to ensure a reasonable rate of return and optimal investment incentives is irrelevant since the fixed network is on the decline.

While Maxis did not have any specific comments regarding the choice of non-LRIC methodology for fixed access services, Maxis did have a range of concerns regarding the application of the building-block methodology. Maxis' main concern in this regard was that the SKMM should address in detail the issue of transition to NGN, and in particular the change in the size of an efficient fixed access network in an environment where copper lines are increasingly stranded assets.

Telekom Malaysia noted that the proposed alternative costing methodology for fixed access was not standard and had been used only in Australia. In particular, it questioned the use of historic costs, when current cost accounting was more usual. It also questioned the need for an alternative approach when bottom-up and hybrid LRIC models had been implemented in Europe. Telekom Malaysia questioned the applicability of the economic debate in Europe to the market in Malaysia, noting differences in service providers, but quoted the European regulators on the relevance of current cost accounting for fixed access services.

Telekom Malaysia concluded that the alternative costing methodology for fixed access would lead to inappropriate wholesale access prices and would exert significant financial pressure on the access provider.

Question 8

The SKMM seeks comments on whether the building-block methodology is appropriate for the costing of fixed access.

Celcom supported the SKMM's examination of and proposal to use the building block approach for modelling fixed access costs.

DiGi was of the view that the network provider should recover costs that are efficiently incurred. However, since asset values are provided by the incumbent operator, with no comparable data, the SKMM should exercise prudence and, where necessary, valuation should be conservative and follow established principles.

Maxis believed that there was limited justification by the SKMM for using this methodology over a straightforward fully allocated cost model, which would have had the benefit of being easily reconciled with the audited accounts, fixed asset register and the forthcoming accounting separation model of Telekom Malaysia's costs. Maxis also highlighted that building-block models appear to have a number of potential drawbacks:

- This approach is susceptible to risk of over-recovery of cost and risks that the incumbent is compensated for inefficient costs;
- The initial valuation of the Regulatory Asset Base is difficult to adjust for efficiency, meaning that the access price would reflect the actual cost incurred rather than the cost incurred by an efficient operator; and
- The method relies heavily on estimates made by Telekom Malaysia itself about future costs without sufficient safeguards around whether these costs are necessary and will actually be incurred. As such, it introduces the risk of inflating the cost model results, leading to inflated access charges.

Packet One was of the opinion that a backloading depreciation model is preferred to encourage earlier fibre adoption. Packet One noted that, in addition, backloading depreciation also reflects the actual market situation.

Telekom Malaysia noted that the proposed alternative costing methodology for fixed access was not standard and had been used only in Australia. In particular, it questioned the use of historic costs, when current cost accounting was more usual. It also questioned the need for an alternative approach when bottom-up and hybrid LRIC models had been implemented in Europe. Telekom Malaysia questioned the applicability of the economic debate in Europe to the market in Malaysia, noting differences in service providers, but quoted the European regulators on the relevance of current cost accounting for fixed access services.

Telekom Malaysia concluded that the alternative costing methodology for fixed access would lead to inappropriate wholesale access prices and would exert significant financial pressure on the access provider.

Question 9

The SKMM seeks comments on using the building-block approach to setting prices for co-location facilities and infrastructure-sharing services.

There was limited support from respondents for the use of a building-block approach but supporters were all concerned about the appropriateness of cost inputs. Those who did not support the building-block methodology were concerned about its apparent change from past practice and all expressed the view that infrastructure sharing prices should be left to commercial negotiation.

Celcom had no issue in principle with the use of a building-block methodology for co-location facilities and infrastructure-sharing services, but had reservations about the models, particularly the averaging of costs. Celcom was concerned that the SKMM may have considered an alternative outcome leading to separate access cost treatment for tower providers and licensed operators.

DiGi agreed with the SKMM that it is appropriate for the building-block approach to be used for co-location and infrastructure sharing services as the infrastructure would only be built once and can be used for over a long period of time and that its exposure to change in technology is limited. DiGi noted, however, that care should be exercised in arriving at the regulatory asset base to ensure the objective of economic efficiency. DiGi suggested that, where necessary, the regulatory asset base should be adjusted using international benchmarks and that this was especially relevant for the tower companies, whose costs are recovered solely from the access seekers.

Fiberail did not support the use of the building-block approach for setting prices for co-location facilities and infrastructure-sharing services. However, it provided a quotation from Wikipedia that described the SKMM's approach to the building-block methodology. Fiberail did not support the contention that an access provider should be compensated only for the marginal cost of co-location facilities or infrastructure-sharing services.

Fibrecomm did not support the use of the building-block approach for co-location and infrastructure sharing services. It believed that the method was untested and needed to be verified for Malaysia. In any case, Fibrecomm preferred that co-location and infrastructure sharing should be left to commercial negotiation.

Maxis stated that mobile infrastructure sharing would benefit from the SKMM's vigilance, but need not be overly regulated, to avoid the risk of discouraging future investment that is critical for extending the reach of broadband. Maxis noted that, while co-location for the purpose of accessing other regulated services is mandated and tightly regulated worldwide (both on price and non-price conditions), there is no clear precedent for direct price regulation of mobile infrastructure sharing in developed markets.

Maxis noted that the evidence of voluntary infrastructure sharing agreements between mobile operators in Malaysia demonstrates that the regulation of infrastructure sharing in Malaysia is not necessary in all instances, but only in selected areas where competition is insufficient. Maxis further noted that the SKMM should, however, monitor contract renewal processes by SBCs, to avoid excessive rent-seeking that is not justified by costs.

Maxis proposed that, conversely, there was a need for strict regulation of network co-location into access providers' premises for the purpose of accessing other regulated products. Maxis noted that apart from price controls, stringent regulation of the terms and conditions on which Telekom Malaysia allows access seekers to co-locate equipment are required, with a particular issue appearing to be the difficulties in co-locating at local exchanges, which makes unbundling and the Bitstream without Network Service almost impossible to implement and thus hinders the emergence of competition in fixed markets.

Packet One's view was that the usage of the block-building approach is good as long as the variables are realistic in value.

PPIT submitted that the building-block approach is new but noted that infrastructure sharing service prices were not normally regulated in other jurisdictions.

Sacofa noted that the building-block approach assumed that service providers had recovered costs in the past – that is, that they had been profitable. However, Sacofa believed that there were cases of loss-making service providers in the past. In addition, Sacofa believed that the approach did not adequately take into account the increase in construction costs in the future; hence, the building-block approach would not compensate service providers adequately for future costs. Sacofa was of the view that, if the SKMM were to regulate prices for infrastructure sharing, it should consider existing and newly constructed facilities separately and may need to provide compensation on a case-by-case basis.

Telekom Malaysia did not support the use of the building-block approach for setting prices for co-location or infrastructure-sharing services. In its view, these services should not be subject to price regulation and the use of average prices would lead to inappropriate incentives for access providers.

Question 10

The SKMM seeks comments on the approach to setting prices for installation charges.

Respondents expressed some support for setting price for installation charges based on the direct operational costs incurred. Those who did not support the approach generally believed that installation charges should not be regulated.

Celcom agreed with the SKMM's approach to setting prices for installation charges, but was of the view that it is not always necessary to set installation charges. Where the charges are small, they can be absorbed into the annual charge, with the wholesale service provider protected against under-recovery through minimum leasing periods.

DiGi agreed with the SKMM that the best approach to setting installation charges is to match them to the direct operational costs efficiently incurred. DiGi noted that the separation of operational costs from the other charges serves to provide clarity on the recovery of the full costs of providing the service.

Fiberail noted that installation charges are one-time charges that cover the specific costs incurred by an access provider in setting up the required service. Fiberail believed that installation charges should not be subject to price controls.

Fibrecomm believed that installation charges should not be regulated, as they are one-off items, and instead should be left to commercial negotiation.

Jaring saw no need to regulate installation charges as these should be commercially negotiated and were often waived for large orders or contracts of long duration.

Maxis supported the approach adopted by the SKMM in principle. Maxis noted, however, that great care must be taken in the operationalization of the approach to ensure that only efficient costs are considered and that installation times (e.g. hours) and unit costs (e.g. cost per man-hour) must reflect efficient provision of the installation service. Maxis noted that inefficiencies due to learning curves and lack of process optimisation should not be included in installation unit costing. Maxis noted with concern that the proposed installation charges are higher than the retail equivalent to consumers, and also higher than the earlier costing exercise and commercial rates from Telekom Malaysia.

Packet One stated that setting the prices for one time installation charges based on direct operational costs is acceptable. However, it highlighted that there are instances of installation being carried out by the access seeker and that the treatment for this arrangement was not addressed in the PI Paper.

Sacofa agreed with the approach to setting installation charges.

Telekom Malaysia believed that installation charges, as one-time charges, should be left to commercial negotiation. In any case, it was not confident that all component charges had been taken into account in the SKMM's approach to installation prices. It noted that labour charges would increase irrespective of demand levels for installations and that, in the case of fixed access, there should be payments by access seekers for initial set-up costs, not just on a per-line activation basis.

3.3 SKMM's final views

3.3.1 Use of TSLRIC+ methodology

The SKMM notes the general support for the use of the TSLRIC+ methodology from all respondents. As described in the PI Paper, the SKMM believes that a bottom-up TSLRIC+ model should be calibrated with deployed networks and reconciled with top-down costs in order to ensure that it truly represents the costs associated with providing services. In the calibration and reconciliation process, the issues of efficient deployment and efficiently incurred costs must be taken into account.

The SKMM has noted the concerns raised about the appropriate cost base and the information asymmetry in the publicly released models between fixed and mobile costs. The SKMM reiterates, however, that it has undertaken careful consideration and due diligence on all the inputs to the models and believes that the final results represent a true picture of the relevant costs. In particular, the SKMM has carefully reviewed the costs provided by Telekom Malaysia for fixed services and has reconciled the calculated or modelled costs with Telekom Malaysia's top-down financial data. This has led to substantial reductions in the network element unit prices used for some main network elements. Some changes to the models have been made in response to new data provided in responses to the Public Inquiry.

The SKMM also notes that the depreciation method used in the TSLRIC+ models in all cases is tilted annuity, which provides a good approximation to economic depreciation. An exact calculation of economic depreciation cannot be done in closed form (without a long time series of data) and is not practical in models of this sort.

3.3.2 Alternative costing methodology for fixed access

The SKMM notes the mixed responses with regard to an alternative costing methodology for fixed access, but notes also the general concern about appropriate cost recovery in this area. There was general support for the contentions that fixed access represents a bottleneck facility and that fixed infrastructure is unlikely to be duplicated.

The SKMM continues to believe, based on the arguments provided in the PI Paper, that a LRIC approach to fixed access costing would risk significant over-recovery of costs and an alternative is required.

3.3.3 Building-block methodology for fixed access

The SKMM has considered carefully the responses relating to the building-block methodology for fixed access. There was some support for using this method but with attendant concerns that costs not efficiently incurred may be included in the cost base. The SKMM recognizes that adjusting the cost base for efficiency remains a difficult issue.

However, the data provided by respondents tends to support the view that a LRIC approach would over-estimate the costs to be recovered from fixed access services, while the building-block costs may include some inefficiencies. On balance, the SKMM believes that the building-block methodology, properly applied, will provide an outcome more in line with its access pricing guidelines.

The SKMM notes that the building-block methodology for fixed access is a form of Fully Allocated Cost (FAC) model and a relatively straightforward one. (This is in contrast to the approach taken by the ACCC, where only some costs were allocated.) FAC models have been used by regulators as a starting point for introducing regulated costs and prices. The point made by Telekom Malaysia that the building-block approach is to an extent backward looking is correct – but this is inherent in a method that seeks to account for costs that have been fully recovered in the past. When the SKMM has built up a database of regulatory costs through accounting separation, it may be possible to move to current-cost accounting for assets that will be replaced. The SKMM is continuing to use the building-block methodology for the Fixed Access model and the HSBB model but has updated some values used in light of the responses received.

3.3.4 Building-block methodology for co-location and infrastructure sharing

The SKMM notes that there was only limited support for regulating prices for co-location and infrastructure sharing. Those respondents who supported regulated prices were generally supportive of the building-block approach but were concerned about using an appropriate and sufficiently detailed cost base.

The SKMM has continued to use a building-block methodology in its Co-location and Infrastructure Sharing cost model but has reconsidered which services should be subject to price regulation.

3.3.5 Installation charges

The SKMM's approach to setting installation charges from the operational costs efficiently incurred on installation activities was generally supported by those respondents who believed that installation charges should be regulated. Other respondents considered that installation charges should not be subject to price regulation.

The SKMM remains concerned that, for services where installation charges apply, some of the cost of the service is recovered from the installation charge and this affects the remaining cost base to be recovered from ongoing charges. It remains necessary, therefore, to include installation charges in the regulated price, for those services subject to price regulation where an installation charge is normally included. The SKMM has therefore continued to estimate installation charges in relevant regulated prices.

Issues raised by respondents concerning quantity discounts or alternative ways of recovering installation costs through minimum contract periods are part of the non-price terms and conditions that are outside the purview of this Public Inquiry.

4. FIXED ORIGINATION AND TERMINATION SERVICES

4.1 Overview

The SKMM developed a Fixed Core and Transmission cost model using the TSLRIC+ methodology to assess the cost of providing fixed termination and origination services. The model was based on an operator of the scale and scope of Telekom Malaysia. As part of the model development, the SKMM determined an appropriate WACC value for a fixed operator like Telekom Malaysia and disaggregated WACC values for the major segments of the fixed network business. A form of the cost model with all commercially confidential data removed was made available on request to interested licensees during the Public Inquiry period. The parameter values for the WACC calculations were also available to interested licensees on request during the Public Inquiry period.

Part C of the PI Paper dealt with fixed services. Chapter 8 provided an overview of the models used for pricing all fixed services and described the calculations leading to estimated WACC values for fixed services. Chapter 9 of the PI Paper then described the inputs to the Fixed Core and Transmission model and the changes made in response to comments from operators, before setting out the SKMM's proposed prices for Fixed Origination and Termination Service. It also canvassed the option of providing asymmetric prices for a small operator.

4.2 Summary of submissions received

Question 11

The SKMM seeks comments on the approach taken in dealing with Fixed Services and whether it provides a consistent view of the Fixed Services in Malaysia.

Celcom did not disagree with the approach to Fixed Services, though it would have liked the SKMM to have developed a view of what consistency means and how it might be tested.

DiGi noted that the 5 categories of services identified are consistent with the fixed services on the Access List.

Fiberail suggested that the hybrid LRIC approach adopted by the SKMM would be satisfactory if the cost drivers were appropriately chosen. Fiberail noted that redundancy and spare capacity were necessary for the industry and their costs should be included in the models.

Fibrecomm supported the approach of linked cost models but emphasised that the underlying assumptions were critical to ensure consistency with service provider deployments.

Maxis believed that the costing principles used to model fixed services are not consistent with the forward-looking approach required for LRIC, because they include legacy assets in the core and transmission networks as the basis for many of the regulated prices, effectively disregarding the extensive (and overdue) upgrade to Telekom Malaysia's core network as part of the HSBB initiative.

Maxis noted that the SKMM only had access to limited data to develop and populate the fixed models and that from the information provided in the Public Inquiry it was not possible for access seekers such as Maxis to assess whether the costs included as the basis for regulated fixed prices were indeed efficient or even consistent with Telekom Malaysia's network costs.

Maxis also noted that a large amount of capital expenditure has gone into the core network as part of the HSBB program to modernise Telekom Malaysia's core network. These upgrades support the entirety of Telekom Malaysia's operations, not only HSBB services, and effectively replace legacy assets that have become inefficient and overly costly. Maxis stated that, consequently, the same converged core network supports the services included in the Fixed Core and Transmission model as well as those in the HSBB model. Maxis was concerned, however, that there was a strong possibility that all HSBB investment was included solely in the HSBB model, and that all legacy assets were accounted for in the Fixed Core and Transmission/Fixed Access model, with no reflection of the synergies that the new core network brings to the combined infrastructure. Maxis noted that this was borne out by an analysis of the cumulative depreciation in the various (model viewing) fixed models, which appeared to overstate Telekom Malaysia's actual depreciation. Maxis noted that this information was not available in the Public Inquiry version of the models and therefore could not be checked.

Maxis noted that, with regards specifically to fixed origination and termination services, the Public Inquiry appeared to indicate that Telekom Malaysia's converged network and the delivery of modern telephony services over IP on the HSBB access network had been disregarded, as the services modelled were strictly PSTN services. Maxis noted that this is not reflective of the current market reality, as Telekom Malaysia had over 400,000 UniFi subscribers (as of 30 June 2012), who had access to an IP-delivered managed telephony service using a geographic fixed number and therefore indistinguishable from a PSTN call from the caller's perspective, but, as evidenced by SKMM's costing, at a significantly lower cost for Telekom Malaysia.

Maxis' view was that the costing models should explicitly consider a migration from legacy products and networks to the (already operational) NGN core network that Telekom Malaysia operates and that this should encompass both the voice traffic being carried over IP in the core, as well as ensuring that the assets modelled exclude redundant assets, for which Telekom Malaysia has been in part compensated through the HSBB grant.

Packet One was of the view that the details were insufficient and there was no explanation given as to why a certain model was chosen over the others. Packet One was not sure how those cost components were being derived (at the same time whether Government subsidies were being excluded etc.), neither was it sure about the utilization level efficiency of the assets or the economic lifecycle of the technology.

Sacofa agreed that the approach presented a consistent view of Fixed Services.

Telekom Malaysia emphasised the importance of the mark-ups in the linked cost models. It provided full-year data on its operational costs to be used in an updated Fixed Core and Transmission model for calculating the network cost mark-up and it claimed there was an error in the model's calculation of the network mark-up.

Telekom Malaysia also believed that the network cost mark-up calculated in the Fixed Core and Transmission model should also be applied in the Fixed Access model.

Question 12

The SKMM seeks comments on the following:

- a) the assumptions used to derive the WACC for Fixed Services; and
- b) the estimates of the disaggregated WACC values used for Fixed services.

Celcom agreed with the approach the SKMM has adopted for deriving the WACC for Fixed Services and the approach to disaggregation.

DiGi noted that for the purposes of the model, the SKMM had used a consistent approach in arriving at the WACC for fixed and mobile services and that, while some assumptions were made in the process, the views taken in arriving at the inputs appear reasonable.

Fiberail remarked that telecommunications was a capital-intensive industry and timely cost recovery was important. Fiberail noted that economic lives should take into account technical obsolescence. Fiberail indicated that tilted and straight-line depreciation

methods will lead to different calculated prices. It suggested that the model should reflect actual accounting practices of the Malaysian industry.

While Fibrecomm generally supported the use of the CAPM for estimating the WACC, it noted that the risks inherent in the transmission business should lead to a higher WACC value for this business than for mobile business.

Maxis highlighted a number of points for consideration:

- While the target gearing proposed by SKMM is 15% (being a mid-point level between the two-year average and Telekom Malaysia's current gearing), based on publicly available information, the current gearing reflects the 'off-balance sheet' treatment of the Government's investment into HSBB, and therefore is likely to be understating the efficient long-run gearing level in Telekom Malaysia's capital structure. Maxis recommended that the SKMM use at least the consensus from financial analysts, which it claimed was closer to 20% and noted that at the time of writing, Telekom Malaysia's actual gearing was in excess of 30%.
- The choice of reference market and weights is justified on the basis of the estimated weight of domestic vs foreign investors. It was not clear how this had been assessed, particularly when it comes to nominees within institutional investors.
- It was also unclear why the SKMM would take a relatively higher risk-free rate benchmark for Telekom Malaysia (set with reference to US Government bonds) vs the mobile industry. In the CAPM model, this is supposed to be a homogenous reference rate against which all equities are assessed. Maxis noted further discrepancies between the equity risk premium used for Telekom Malaysia's WACC compared to other services.
- It was unclear how the SKMM disaggregated the beta values for various parts of Telekom Malaysia's business. In particular, the HSBB business is assigned a relatively high beta, despite having been financed in part by a Government grant, which insulates Telekom Malaysia against some market risk. Maxis also argued that the HSBB program deliberately targets high economic impact areas, which are also those where latent demand for high-speed broadband is likely to be the highest, further reducing market risk.
- Telekom Malaysia's WACC, as declared in its quarterly reports, has been falling and was 6.15% as of 30 June 2012. Assuming this is a post-tax WACC, it

corresponds to an aggregated WACC of 8.2% pre-tax, using the SKMM's definition. This compares to 8.9% for Telekom Malaysia as a group in the SKMM's calculations, which appear overstated. The current pre-tax WACC of Telekom Malaysia from Bloomberg stands at 8.0%, which is again lower than the proposed rate in the SKMM's model.

Packet One was of the view that the assumptions used to derive the WACC should be based on the Malaysian Government Securities yield instead of US Treasury bonds to reflect the actual risk-free rates of Malaysian market. Packet One calculated the yield for Malaysian Government Securities as around 3.7%. Packet One also claimed there was a calculation error in Table 6 of the PI Paper, with its calculation of the cost of equity being 7.3% for ASEAN-5 and 6.8% for the World, resulting in the weighted average rate therefore being 7.25%.

Sacofa believed that the cost of equity should be based on the Malaysian context alone. Sacofa noted that small companies faced different equity and debt costs than those faced by Telekom Malaysia. As a consequence, Sacofa believed that the WACC for a small fixed operator should be approximately 20% and it warned that, if the WACC is set too low, operators may progressively exit the market as profits are too low.

Telekom Malaysia agreed that the overall approach to calculating the WACC was reasonable and consistent with regulatory practice. It noted, however, that there was an alternative approach taken in New Zealand to adjust for the global financial crisis. Compared to this alternative, the SKMM's estimated market risk premium for global markets was at the low end of the range. In addition, Telekom Malaysia suggested that the SKMM had under-estimated the asset betas for the HSBB and copper access businesses, by not taking account of the increased uncertainty generated by price regulation for the services in these businesses and the increasing systematic risk associated with the copper business.

TIME disagreed with the WACC calculations and claimed that its own WACC was almost twice the value for a fixed operator used in the models. TIME noted that the beta WACC parameter, in particular, as a measure of volatility was particularly specific to a company and the use of a sector-average WACC value would lead to "unnatural" results in the cost model. Other company-specific values were also needed for the WACC calculation. TIME proposed that an alternative procedure would be to determine an access price without reference to WACC and then to seek undertakings from each operator on its access price including its company-specific WACC. TIME believed that such a process would be a positive step towards an "individualized" access pricing regime.

Question 13

The SKMM seeks comments on the proposed regulated prices for fixed network origination and termination services.

Celcom had concerns about both the absolute fixed termination and origination rates and their value relative to the equivalent mobile rates. Celcom's view was that an efficient operator faced with declining traffic would not seek to impose the burden of higher unit costs onto its customers. Celcom stated that the stranded assets in the fixed model should be written off and that the fixed termination and origination rates should be calculated based on MEA, being an NGN-based network. Celcom supplied information on a range of countries all of which had cost-based approaches to setting fixed and mobile interconnection rates and had the mobile termination significantly higher than the fixed termination rate.

Celcom noted that the trend for interconnection rates is to decline, and for the ratio between fixed and mobile to tend to unity as rates are decreased. Celcom stated that, therefore, fixed and mobile must be in the same market for voice termination and hence whichever has the lower unit costs should be used to set the efficient termination price for the whole market. Celcom considered that Malaysia has not reached this point yet, but the SKMM should not allow any interconnection price to increase and should ensure that the rate of decline for different services is implemented in a fair manner.

Celcom noted that the PI Paper did not discuss the issue of which fixed termination rate applies for calls originating from mobile (which by their nature are non-geographic) numbers, and hence not subject to number analysis. Celcom believed that the SKMM should determine an equitable and consistent default rate to apply in these situations.

DiGi noted that, while the calculated pricing for fixed network origination and termination services in the regulatory period is declining due to a "simplification" of the core network as demand for fixed voice service declines, it was interesting that in 2015 the FTR is higher than the MTR. DiGi noted that ongoing modernization of the network to NGN and technologies should result in lower prices. DiGi stated that it is essential therefore that the data and key assumptions used in the model are credible. A reasonable step would be to compare the results against international benchmarks to ensure their reasonableness; the model should also reflect the termination cost of an efficient operator. DiGi included in its submission a comparison of MTR to FTR in Asia Pacific countries showing that MTR was higher, in some cases significantly so, in all the countries listed.

Deol & Gill questioned the contributions to the mark-ups used to calculate prices in the cost models and requested confirmation that the mark-ups conformed to the relevant regulations and excluded certain charges. Deol & Gill also claimed that the proposed local rates for PSTN Network Origination and Termination Services are higher than the statutory retail local call rate in the Communications and Multimedia (Rates) Rules 2002.

Jaring supported the narrowing of the price gap between TSoIP and other fixed termination and origination services. Jaring believed that traditional fixed networks were now in legacy mode and all infrastructure costs had already been recovered: this should cause lower prices.

Maxis' view was that, on the basis of the consideration of the implementation of the fixed cost models, it appears that the cost basis on which regulated prices have been calculated is likely to have been overestimated, leading to excessive regulated prices in the regulatory period.

Maxis stated that the SKMM must ensure that the costs in the model reflect efficient or actual technology and exclude stranded assets. Maxis suggested that the costs provided by Telekom Malaysia must be audited in detail, to ensure that there is no double-counting between the various models, in particular with regards to core network assets. This should also review the actual use of legacy network assets, to validate the extent of convergence and carriage of traditional services (PSTN and transmission) over the more efficient NGN infrastructure. Maxis considered that, while the migration from a legacy circuit-switched core network to an all-IP NGN is a complex and costly process, Telekom Malaysia has been able to mitigate the negative impact of migration thanks to the large grant it received from the Government, which has helped it deploy and migrate its network to NGN.

Maxis noted that the use of an economic depreciation model allows for the alignment of cost recovery with demand. Maxis listed the example of several European regulators and their approach to NGN architecture for network cost models, assuming either an NGN-only network, or a migration path from the legacy network to a full NGN network

Maxis suggested that the SKMM must reflect the current very rapid rate of migration from copper to fibre in HSBB areas, and reflect the resulting, much lower cost of termination on Telekom Malaysia's network. Maxis noted that the fixed origination and termination prices are calculated solely on the basis of the Fixed Core and Transmission model, which in turn only captures the costs of standard PSTN telephony on the copper network. Maxis' view was that it is essential that the SKMM computes regulated fixed termination rates on the basis of a blended (e.g. weighted average) cost between PSTN

and managed voice HSBB, taking into account a suitable migration of traffic that recognises the fact that voice bundles on HSBB are extremely cheap for the end user (unlimited fixed voice) and therefore likely to result in an increase in the voice traffic.

Maxis welcomed SKMM's willingness to adjust fixed termination and origination prices in the first year of the regulatory period (2013), as in Maxis' view the costs for fixed termination are likely to be overstated and present significant implementation issues. Maxis highlighted that the main problem is the cross-over of fixed and mobile termination rates, which contrasts with well-established examples in many countries. Maxis included information showing a large differential between mobile and fixed termination rates in a number of countries, irrespective of the application of so-called pure LRIC. Maxis stated that this divergence from international results calls for a detailed review of the costs included in the fixed model.

Maxis noted that the proposed local fixed termination rate is equal to the single tandem rate, but that this was in fact a modelling artefact and that the calculated rates for local termination are higher than single tandem termination; however, as local termination uses a subset of the assets used in single tandem termination, this suggests that the modelling of these two services should be reviewed in detail.

Maxis noted that the proposed regulated rates are higher than the current regulated retail local call prices, and that this will result in small fixed operators operating the local call service at a negative gross margin, which will negatively impact incentives to enter or remain in the fixed telephony market.

Maxis also noted that the relatively higher origination charge compared to termination, which is not a usual case in other markets, will result in Telekom Malaysia gaining an entrenched competitive advantage in the 1800 and 1300 service market, as it will be able to offer better rates to businesses wanting to operate these numbers than its competitors.

Corresponding to Ministerial Direction No. 4 of 2010, Packet One agreed with the rate of the new regulated price for fixed network origination and termination services. Packet One noted that, as service providers move towards NGN, costs of the network elements are reducing and therefore the regulated rate should be lower and it should continue to decline over the years as the network becomes more efficient.

Packet One was of the view, however, that the distance-based prices (i.e. double tandem and double tandem with submarine cable) were no longer relevant today due to the migration to NGN reducing the number of POIs required for an efficient operation.

Packet One noted that service providers including Telekom Malaysia are migrating their systems to NGN, but at present service providers are on a hybrid network (i.e. operating on both legacy network and NGN). Packet One noted that this creates unclear demarcation on whether the traffic is being carried on a legacy network or on an IP-based network.

Packet One proposed that the new regulated price be maintained at a single rate as per the methodology applied in Ministerial Direction No. 4 of 2010.

Telekom Malaysia commented on the changes in calculated prices between those presented during model viewing and those available in the final models. It suggested that the changes made should have resulted in higher prices. Using its own model, Telekom Malaysia had calculated higher prices. Telekom Malaysia had also used its own data in the model provided by the SKMM and had discerned problems with model calibration. It provided new data on the quantities of access gateways and urged the SKMM to recalibrate the Fixed Core and Transmission model. Telekom Malaysia believed that, in the face of declining traffic levels, the downward trend in calculated fixed origination and termination prices indicated that the model was requiring an efficiency level that was unattainable in practice. This was in contrast to the mobile model.

TIME supported the proposed regulated prices for large fixed operators but believed that a small operator (such as TIME) should have higher prices. The treatment of small operators is discussed further under Question 14. TIME believed that a uniform price for all fixed operators would be an example of "regulatory capture" of the SKMM by the interests of large fixed and mobile operators and is contrary to the CMA.

TIME noted that the definition of "single tandem" and "double tandem" needed to be clarified. TIME preferred to do far-end handover to all operators but was hampered by the lack of POIs with some operators and was subsequently suffering from having to pay double tandem charges. TIME urged the SKMM to clarify the handover principles in the PI Report.

TIME also suggested that there was no need to regulate the price for TSoIP, as the impact of the service on the market is insignificant.

YTL's view was that the currently mandated rate of 5 sen/minute should continue, since it is higher than the proposed local, single tandem and double tandem rates for Fixed Termination. YTL was of the view that the higher 5 sen/minute would more than compensate for the double tandem with submarine cable costs within the FTR.

Question 14

The SKMM seeks comments on the treatment of small fixed operators in the setting of regulated prices.

Celcom agreed with the SKMM's proposed treatment of small fixed operators and shared the SKMM's view that this will provide an incentive to these operators to grow and to develop innovative services. Celcom believed that it is not the role of the regulator to make compensatory adjustments that act like a subsidy and which have the effect of sustaining smaller, possibly sub-scale operators.

Deol & Gill did not support the notion of separate access prices for small operators as such prices would distort the market and move operators away from efficient operations.

DiGi agreed with the SKMM's view that scale alone should not be the differentiating factor when setting regulated access prices and that traffic will grow in due course, driven by new services, especially data. DiGi noted that symmetric pricing contributes to enhanced static economic efficiencies (by limiting allocative and productive inefficiencies), investment and innovations, and benefits end users. DiGi also noted that, conversely, asymmetric pricing is not in the long-term benefit of the end user as it may result in competitive, investment, and network distortions; and it may reduce the incentive for smaller service providers to catch up with larger providers.

Maxis, while appreciating that the SKMM's interpretation of the CMA under which it operates effectively prohibits asymmetric treatment of access providers, nevertheless believes this interpretation is debatable. Maxis' position remains that it, as a fixed provider, is extremely small. As such, compliance with the MSA/MSAP regulations beyond termination/origination is a significant burden. Maxis asked the SKMM to review its position and to allow small operators (as defined in SKMM's own modelling) to be exempt from regulations and be allowed to negotiate on a commercial basis with access seekers.

Telekom Malaysia believed that the SKMM should continue to set symmetric prices and quoted European practice in support. It noted that different treatment for small fixed operators would raise difficulties in defining what was meant by "small".

TIME was of the view that a small fixed operator should be able to set asymmetric and higher access prices than a large operator. In support of this view, TIME noted that the fixed market remained asymmetric in terms of network coverage, installed consumer base and quality of services, as well as economies of scale and government support.

TIME noted that asymmetric pricing of access services has been common in other jurisdictions and was suggested by the European Commission in 2000. TIME believed that, if the SKMM set prices for a small fixed operator, TIME should be declared the only small fixed operator.

TIME contended that the remark in the PI Paper that small fixed operators will depend more on data services for growth, and not on voice service, is support by the SKMM for cross-subsidies, contrary to the CMA.

YTL supported the implementation of asymmetric pricing where small operators are given slightly higher rates for a given period of time to encourage roll-out and innovation.

4.3 Model updates

Telekom Malaysia submitted full-year operational costs for 2011, replacing the part-year values provided in the original data response. The new data showed some cost reallocations compared to the part-year data. The SKMM used the new values to update the top-down data in the Fixed Core and Transmission model. The effect was to reduce slightly the network cost mark-up and to increase slightly the common business cost mark-up.

Since values calculated in the Fixed Core and Transmission model are used in all the other cost models, the final calculated values in all models are affected.

Telekom Malaysia also submitted a new forecast of the number of access gateways used in its model. The SKMM decided to leave the model unchanged but to consider the effect of the substitution of other equipment by access gateways as the data services grow. The model will over-estimate the costs to some extent in future years but the effect is small.

The SKMM reviewed the de-averaging of local and single-tandem origination and termination rates and reallocated the costs to better reflect the actual commercial practice for termination of local calls. The routing factors were not changed.

4.4 SKMM's final views

4.4.1 Consistent view of fixed services

Respondents seemed to agree that, if the inputs were chosen appropriately, the 3 interlinked models for Fixed Services would provide a consistent view. The SKMM has carefully considered the detailed criticisms of the linkages made by Maxis and Telekom Malaysia. The SKMM wishes to emphasise that it has been diligent in seeking and analysing fixed services data from Telekom Malaysia and smaller fixed network operators and believes that it has come to a consistent view of the relevant costs and cost allocations. While depreciation is difficult to reconcile (because of the different methods by which it is calculated for different purposes), the SKMM has been able to cross-check the asset values and operational expenses with published data.

With regard to mark-ups in the models, the SKMM has checked that the asset base used in the Fixed Access model already implicitly includes the network mark-up and has therefore made no change to that model. The mark-ups for common business costs have been updated in the Fixed Core and Transmission model, based on full-year operational cost data from Telekom Malaysia, and this has an effect on all other cost models.

Telekom Malaysia emphasised the importance of the mark-ups in the linked cost models and claimed there was an error in the Fixed Core and Transmission model's calculation of the network mark-up. The SKMM notes that this was a misunderstanding by Telekom Malaysia of the calculation. The top-down costs include all costs incurred by the operator while the bottom-up calculations provide only some costs. The network mark-up is based only on those cost categories not calculated bottom up.

With the model updates noted in this PI Report, the SKMM continues to believe that the 3 linked models provide a consistent view of the costs and prices for Fixed Services.

4.4.2 Fixed services WACC values

The SKMM carefully considered all the criticisms and suggestions on the calculation of WACC values for fixed services. It notes the Telekom Malaysia report on WACC estimates from elsewhere and concedes there are other methods to account for the recent financial crises. The SKMM continues to prefer the strictly quantitative approach taken in its estimates. The removal of some time series data from the WACC estimates has a small positive effect on the US T-bond risk free rate and a small negative effect on the Malaysian bond default spreads. For Telekom Malaysia's asset betas, the time series

of rolling asset betas with the removal of some periods after the Lehman Brothers collapse gives the average used in the WACC calculation.

As for TIME's proposal that an alternative procedure would be to determine an access price without reference to WACC, the SKMM is unclear how this could be achieved.

For reference markets, the SKMM has used a weighted average of local, regional and global markets. The weights were based on investor data from Malaysia, taking into account the effect of nominees. The SKMM continues to believe that the cost of equity should be assessed against a reference market that includes a foreign component. Even if (as Sacofa argues) investors in some sectors are purely domestic, these investors will still be seeking returns benchmarked against a more diversified portfolio. The SKMM notes that it has used different market weights for investors in small companies from the weights used for large companies.

Packet One claimed there was a calculation error in Table 6 of the PI Paper, with its calculation of the cost of equity being 7.3% for ASEAN-5 and 6.8% for the World, resulting in the weighted average rate therefore being 7.25%. The SKMM has rechecked its calculations and found no error.

The SKMM noted the various comments about the relative riskiness of certain investments. It appeared that respondents generally assessed the risks in their own markets as higher than the risks in others. The SKMM has taken a quantitative view of risk-free rates based on yield to maturity of US T-bonds: because of different maturities, this gives different rates for fixed and mobile operators.

The assumed forward-looking market gearing of Telekom Malaysia is an important parameter, as Maxis noted. The gearing value was set taking into account past history as well as analysts' forward estimates. The value used is not a consensus view but is an estimate based on all available data.

The disaggregation of Telekom Malaysia's asset beta into components for different businesses was also commented on by several respondents. The SKMM notes that the weighted average of the disaggregated betas is equal to the overall asset beta. Hence, any change in one component – for example, to increase the volatility – will need to be matched with a change in one or more other components. The asset beta for the HSBB business was arrived at by first estimating the betas for the other components, which are businesses with a long history.

Finally, the SKMM notes that there is new published data on actual WACCs used for internal investments since the WACC estimates were made, but these are broadly consistent with past data and the SKMM sees no need based on this information to change its WACC values.

4.4.3 Final regulated prices for fixed network origination and termination services

The SKMM notes that many of the comments suggested that the cost base for fixed services was too large because the calculated fixed termination rate was higher in some years than the mobile termination rate. It should be noted, by contrast, that Telekom Malaysia believes some legitimate costs have not been included. The SKMM wishes to assure all stakeholders that it has carefully and diligently considered all costs included in the Fixed Core and Transmission model and believes that the cost base is appropriate and in accordance with the access pricing principles.

The SKMM notes that the comparison of the termination rates with global benchmarks suggests that the fixed termination rate is in line with global rates while the mobile termination rate is at the low end of the range. The calculated mobile termination rate in Malaysia is generally considered to be based on well-founded data.

The SKMM also notes the comments made by some respondents on the need to account for the transition to an all-IP network. The SKMM wishes to point out that this effect has been explicitly included in the model released at the time of the Public Inquiry and described in the PI Paper. Telekom Malaysia had provided detailed routing factors and these were used after review and with some modifications in the final model. The model described in the PI Paper permitted the transition to an all-IP core network to be explored in detail. The PI Paper also contained some sensitivity analysis of the assumptions made in this transition. It has not been assumed that the transition to an all-IP core network is complete by the end of the regulatory period.

As for TIME's proposal for the SKMM to clarify handover principles in the PI Report, the SKMM notes that handover principles are already specified in subsection 5.16.6 of the MSA.

The SKMM has revisited the use of a glide path for fixed origination and termination to make the use of glide paths consistent between the fixed and mobile cases. The final regulated prices shown in the following tables implement a linear glide path for local, single tandem and double tandem options.

Table 3: Fixed Network Origination Service Final Prices**PSTN Network Origination**

	Units	2013	2014	2015
Local	sen/min	3.94	2.88	1.82
Single Tandem	sen/min	4.85	4.69	4.54
Double Tandem	sen/min	5.51	6.02	6.53
Double Tandem with Submarine Cable	sen/min	18.40	18.00	17.68

IP Network (0154) Origination

	Units	2013	2014	2015
National	sen/min	1.28	1.25	1.28

Source: Fixed Core model; Ovum calculation

Table 4: Fixed Network Termination Service Final Prices**PSTN Network Termination**

	Units	2013	2014	2015
Local	sen/min	3.88	2.76	1.65
Single Tandem	sen/min	4.70	4.40	4.10
Double Tandem	sen/min	4.94	4.88	4.83
Double Tandem with Submarine Cable	sen/min	17.37	17.36	17.44

IP Network (0154) Termination

	Units	2013	2014	2015
National	sen/min	1.53	1.50	1.53

Source: Fixed Core model; Ovum calculation

There was little support for separate origination and termination rates for a small fixed operator and the SKMM believes that the economic arguments for symmetric regulation in this case remain strong. The SKMM therefore does not intend to set different regulated prices for small fixed operators.

On TIME's question of the remark in the PI Paper that small fixed operators will depend more on data services for growth, and not on voice service, the SKMM regrets that this remark could have been misunderstood. It was merely an observation on the likely business plans of small fixed operators (and the relative importance of fixed voice service in those plans) and was not meant to lend support to any form of cross-subsidy.

5. TRANSMISSION-RELATED SERVICES

5.1 Overview

The SKMM used its Fixed Core and Transmission model to calculate costs and prices for the various transmission-related services on the Access List. Chapter 10 of the PI Paper described the transmission calculations in the model and the changes made after model viewing. It then set out proposed regulated prices for all transmission-related services on the Access List.

In addition, the PI Paper canvassed the possibility of different prices for transmission-related services in East Malaysia and sought comments on this issue.

5.2 Summary of submissions received

Question 15

The SKMM seeks comments on its approach to setting transmission prices and the proposed prices for transmission services.

Celcom considered that the SKMM's general approach to setting transmission prices was acceptable. Celcom considered, however, that the SKMM should do more to verify the ratio used for allocating costs amongst transmission-related services of differing capacities.

Deol & Gill sought confirmation of the inclusions and exclusions in the proposed transmission prices and suggested there should also be estimated charges for other items, such as relocation of packet-based transmission services. Deol & Gill also noted that back-up facilities should be included in the prices for Interconnect Link Service and Connection Services to the Submarine Cable System.

While DiGi was of the view that the approach taken by the SKMM to transmission costing appeared reasonable, they were concerned that the input cost data had been sourced from a single operator who is dominant in each of the 5 categories of fixed services. DiGi noted that it is important that any duplication of cost should be removed and, wherever possible, the input data should be benchmarked to international prices.

Fiberail quoted references in support of regulatory forbearance in developing markets or those subject to extensive competition. Fiberail therefore supported the view that

transmission prices should not be regulated in areas of high competition; the proposed maximum prices should only be imposed in non-competitive areas.

Fibrecomm believed that the market for transmission is currently sufficiently competitive and hence there was no need to regulate prices. Fibrecomm preferred to maintain commercial negotiation as the practice for setting transmission prices between operators.

Maxis stated that the calculation of transmission costs, particularly for high-bandwidth services, must recognise the efficiency gains achieved by the NGN core network. Maxis provided information showing the equipment costs for different technologies and bandwidths, which showed a significant saving in using Ethernet instead of SDH. Maxis also provided a benchmark of normalised Ethernet-based lease-line product pricing, showing that the increase in price with bandwidth was significantly higher in Malaysia than in other countries. Maxis' view was that the SKMM should recognise the improved efficiency on the Ethernet network, and regulate affordable leased-line services, especially for high bandwidth products.

Maxis noted that the market prices for high-bandwidth transmission services are no longer dependent on distance but are mainly based on transmission rate within a given geographic area and that this recognises the fact that physical transmission assets (cables, ducts, etc.) will not vary over time, given the virtually unlimited bandwidth that can be achieved on core network fibre optics.

Maxis suggested that, in recognition of these factors, the SKMM should regulate distance-independent prices to align with market practice and that, in the event that the SKMM decides to retain distance-dependent regulated price ceiling, Maxis suggested that the SKMM provides detailed guidelines as to how disputes relative to distance-independent services will be arbitrated. Maxis noted that the proposed prices in the PI Paper are based on cable length based distance instead of 'crow's flight' distance and that the latter approach is currently used in commercially negotiated arrangements. Maxis would welcome guidance from the SKMM on some bounds for a ratio between cable length and 'crow's flight', so as to provide further certainty to access seekers.

Maxis noted that there are no specifications on grade of service for the wholesale transmission products; however, QoS requirements have an impact on cost, and it is unclear what is reflected in the proposed regulated prices. Maxis emphasised that carrier-grade transmission products absolutely require some form of QoS guarantee, typically in the form of a grade of service (GoS), supported by a service-level agreement and that the regulated pricing approach currently proposed carries the risk that access

providers will interpret the absence of QoS/GoS as meaning the regulated service is for 'best-effort' only, i.e. with no guarantees of any sort. Maxis suggested that the SKMM impose clear specifications on service quality in order to ensure a clear guidance for access providers to deliver a certain level of service for transmission products.

Packet One highlighted that the proposed regulated pricing based on distance is not reflective of the industry's current pricing practice for IP-based services. Packet One noted that from their preliminary analysis of the proposed prices they concluded that there was no commercial sense to subscribe to the service. Packet One's view was that the distance-based pricing would only make sense if the SKMM regulates the dark fibre services.

Sacofa agreed with the approach to setting transmission prices but believed that the proposed regulated prices did not sufficiently take account of the need for back-up facilities in order to provide 99.95% reliability.

Telekom Malaysia suggested that regulatory best practice would not set prices for transmission services on routes that are sufficiently competitive. It submitted that there is no need to regulate packet-based transmission in critical business areas as there is no dominance by any operator and prices are competitive. Further, Telekom Malaysia proposes the exclusion of cost-based regulation of transmission services in a list of States in Peninsular Malaysia (which was based on the Determination of Cost-based Interconnect Prices and the Cost of Universal Service Obligation, TRD 006/98) and along certain routes.

Telekom Malaysia maintained that the use of transmission distance was misleading for high-speed packet-based services because the physical radial distance does not accurately reflect the transmission cost.

Telekom Malaysia had investigated the cost model and believed it had discovered an error in the costing of the distance-related component of transmission services.

Commenting on specific issues, Telekom Malaysia sought clarity on the definition of Transmission Service (in its view to include a tail portion and installation charges) and the inclusion of a User Provider Edge device in some services. It also questioned the use of average prices for transmission services, as costs were specific to each route.

TIME proposed that regulated transmission prices should not be set in areas where there is sufficient competition. It noted that the SKMM had previously suggested that transmission should not be seen as a bottleneck service in areas where there were three

or more competitive providers. TIME suggested that the various technology alternatives meant that the barriers to entry were generally low. Technology choice has meant that prices have been falling in recent years.

If the SKMM were to persist with setting regulated prices for transmission services, then TIME believed that the proposed use of the distance-based prices as the average rate for distance-independent prices would be commercially unrealistic and cumbersome. TIME suggested that the process would not promote certainty.

In any case, TIME indicated that it would not be able to recover its costs from the proposed regulated prices, as the prices were set with reference to Telekom Malaysia's costs. TIME therefore urged the SKMM not to impose regulated prices on TIME.

For interconnect link service and connection services to the submarine cable system, TIME proposed that the prices should be regulated but that the proposed prices were too low for TIME to recover its costs, since the prices were set using data from Telekom Malaysia. TIME suggested it would not build facilities at the proposed prices.

Question 16

The SKMM seeks comments on setting higher regulated prices for Transmission Service in East Malaysia and requests data on any additional costs that should be reflected in cost-based prices.

Celcom considered that the issue of price differentials for East Malaysia versus national averaging is a policy issue, but on balance supported the SKMM's approach as it relates service charges to costs and acts as an incentive for driving efficiency.

DiGi took the view that prices for Transmission Services should be symmetric throughout the country and that any potential higher transmission service prices in East Malaysia must be substantiated by the existing providers with relevant data and adoption of cost-based principles.

Fibrecomm supported the need for higher regulated prices in East Malaysia in order to provide incentive for further investment in transmission infrastructure and the development of competition. It noted that cost differences will occur due to smaller market size, more difficult terrain, higher costs for transportation of material, higher cost of labour and higher leasing costs for machinery.

Maxis' view was that regulated prices should in principle be consistent with cost causation and that if the SKMM decided to set higher regulated prices in East Malaysia, it must have evidence that transmission services incur higher costs in the region and the additional charges should be cost based. Maxis noted that the SKMM needs to consider a policy question in setting these prices, as:

- geographically averaged prices would reduce prices in East Malaysia but result in slightly increased prices overall, sending a "buy" signal to access seekers in East Malaysia, and a "build" signal in Peninsular Malaysia; and
- separate prices for East Malaysia and Peninsular Malaysia would result in high prices in East Malaysia and slightly lower prices in Peninsular Malaysia, reversing the signals for access seekers to build or buy.

Maxis was of the view that having higher prices in East Malaysia would actually damage investment in downstream services and infrastructure, which are more critical in the short term (e.g. mobile data coverage), and would recommend applying a unified, single national price.

Packet One noted that there is a huge difference in local fibre leased-line rates between Peninsular Malaysia and East Malaysia, with East Malaysia local fibre leased-line rates being far more expensive than those in Peninsular Malaysia. Packet One noted that this may be due to the lesser number of competitors in East Malaysia. Packet One suggested that, in order to encourage rollout of services to East Malaysia, the SKMM should set a standardized regulated price with Peninsular Malaysia.

Sacofa supported higher regulated prices in East Malaysia and provided data on the difference in costs for materials and operations between Peninsular Malaysia and East Malaysia.

Telekom Malaysia agreed that there were additional costs incurred for transmission services in East Malaysia and gave some examples of higher costs. It expected that regulated prices for East Malaysia would be higher than those proposed in the PI Paper.

TIME reiterated its view that regulated prices should only apply in areas without sufficient competition. TIME noted the difficulties in recent years in deploying transmission in East Malaysia due to various restrictions and believed that there was no progress towards effective competition. TIME therefore concluded that transmission prices should be regulated in East Malaysia.

U Mobile's view was that there is an information asymmetry and transparency issue, given that the fixed operator had access to the populated mobile cost model, whilst the mobile operators did not have the same access. U Mobile's view was that, given that this was a Public Inquiry, the SKMM should make the populated fixed network model available, else due process issues would arise.

5.3 Model updates

Telekom Malaysia submitted that a User Provider Edge device was required for some transmission services. The cost of this device was included in the costs of the relevant transmission services in the Fixed Core and Transmission model.

Maxis provided new datasets on the increase in cost for Ethernet transmission as the transmission rate increases. The new factors were included in the model for calculating Ethernet transmission costs at the higher rates, leading to a lower increase in costs and prices as the transmission rate increases.

5.4 SKMM's final views

Transmission services have high barriers to entry and remain a key input to all telecommunications services, and there remains a need to set efficient regulated prices.

The SKMM notes the view from some respondents that transmission services are either fully competitive or are moving towards full competition on selected routes. Further, the SKMM notes that reference was made specifically to Paragraph 2 of TRD006/98, and the SKMM would like to clarify that the paragraph has already been revoked. Nevertheless, the SKMM recognises that this is an important issue, and since it has not been specifically deliberated upon as part of the Public Inquiry, and there has only been submission by Telekom Malaysia on routes to de-regulate transmission services, the SKMM intends to carry out a separate study to address this issue.

The SKMM also reaffirms its preliminary view in the PI Paper that there is a need to set regulated prices for Interconnect Link Service and Connection Services to the Submarine Cable System.

The SKMM notes the responses that indicate that commercial IP-based transmission services are not sold on the basis of distance. The issue for regulated prices is that the cost drivers for transmission costs are quantity and distance and averaging the prices over distance sends the wrong signals about buy vs build decisions into the market. The point made by Maxis that a transmission network, once established, can be increased in

capacity without further distance-related costs is an example, from a regulatory viewpoint, of how a monopoly once created may be hard to compete against. The SKMM is therefore maintaining the distance-based component in the regulated prices.

Maxis provided new data on the cost increases with transmission rate for Ethernet services. Although this data was not directly used, the SKMM re-examined the rate of increase of cost for Ethernet services and, after examining publicly available datasets of prices, amended the cost parameters. Ethernet prices, like other transmission prices, follow a power law function but at a lower rate of increase.

As for Telekom Malaysia's claim that it had discovered an error in the costing of the distance-related component of transmission services, the SKMM notes that the model has been misunderstood by Telekom Malaysia. The model uses a scorched node assumption to multiplex transmission quantities onto physical links to calculate distance-related transmission costs. It then uses the service-related distances for leased lines to calculate the unit distance-related costs.

The SKMM notes that the costing of transmission services includes restoration capacity to maintain the availability of 99.9%. The SKMM's view is that the other non-price terms and conditions mentioned in the Public Inquiry responses, including Service Level Agreements, are best left to the details of individual revised Access Reference Documents.

For Transmission Service and Wholesale Local Leased Circuit Service (excluding those services wholly within East Malaysia), the SKMM has determined the following final prices.

Table 5: Transmission Service Final Prices (Peninsular Malaysia)

64 kb/s leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	135	127	119
Above 0 to 5 km	RM/year	264	236	215
Above 5 km to 10 km	RM/year	517	449	403
Above 10 km to 20 km	RM/year	904	775	691
Above 20 km to 30 km	RM/year	1,419	1,210	1,075
Above 30 km to 40 km	RM/year	1,935	1,645	1,459
Above 40 km to 50 km	RM/year	2,451	2,080	1,843
Above 50 km to 60 km	RM/year	2,966	2,516	2,227
Above 60 km	RM/km/year	52	44	38

E1 (2 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	990	928	873
Above 0 to 5 km	RM/year	1,933	1,723	1,575
Above 5 km to 10 km	RM/year	3,780	3,282	2,950
Above 10 km to 20 km	RM/year	6,608	5,669	5,055
Above 20 km to 30 km	RM/year	10,379	8,850	7,862
Above 30 km to 40 km	RM/year	14,149	12,032	10,669
Above 40 km to 50 km	RM/year	17,920	15,213	13,476
Above 50 km to 60 km	RM/year	21,690	18,395	16,283
Above 60 km	RM/km/year	377	318	281

E3 (34 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	5,012	4,697	4,421
Above 0 to 5 km	RM/year	9,784	8,724	7,973
Above 5 km to 10 km	RM/year	19,137	16,617	14,936
Above 10 km to 20 km	RM/year	33,454	28,697	25,593
Above 20 km to 30 km	RM/year	52,542	44,804	39,803
Above 30 km to 40 km	RM/year	71,631	60,911	54,012
Above 40 km to 50 km	RM/year	90,719	77,018	68,222
Above 50 km to 60 km	RM/year	109,808	93,125	82,431
Above 60 km	RM/km/year	1,909	1,611	1,421

STM-1 (155 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	11,173	10,472	9,856
Above 0 to 5 km	RM/year	21,812	19,449	17,775
Above 5 km to 10 km	RM/year	42,664	37,044	33,297
Above 10 km to 20 km	RM/year	74,580	63,976	57,056
Above 20 km to 30 km	RM/year	117,136	99,884	88,734
Above 30 km to 40 km	RM/year	159,691	135,792	120,413
Above 40 km to 50 km	RM/year	202,247	171,701	152,091
Above 50 km to 60 km	RM/year	244,802	207,609	183,769
Above 60 km	RM/km/year	4,256	3,591	3,168

STM-4 (622 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	25,139	23,563	22,175
Above 0 to 5 km	RM/year	49,076	43,761	39,994
Above 5 km to 10 km	RM/year	95,993	83,350	74,919
Above 10 km to 20 km	RM/year	167,806	143,945	128,376
Above 20 km to 30 km	RM/year	263,555	224,739	199,653
Above 30 km to 40 km	RM/year	359,305	305,533	270,929
Above 40 km to 50 km	RM/year	455,055	386,327	342,205
Above 50 km to 60 km	RM/year	550,805	467,121	413,481
Above 60 km	RM/km/year	9,575	8,079	7,128

Ethernet (10 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	2,227	2,088	1,965
Above 0 to 5 km	RM/year	4,348	3,877	3,544
Above 5 km to 10 km	RM/year	8,505	7,385	6,638
Above 10 km to 20 km	RM/year	14,868	12,754	11,375
Above 20 km to 30 km	RM/year	23,352	19,913	17,690
Above 30 km to 40 km	RM/year	31,836	27,071	24,005
Above 40 km to 50 km	RM/year	40,320	34,230	30,321
Above 50 km to 60 km	RM/year	48,803	41,389	36,636
Above 60 km	RM/km/year	848	716	632

Fast Ethernet (100 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	5,325	4,991	4,697
Above 0 to 5 km	RM/year	10,395	9,269	8,471
Above 5 km to 10 km	RM/year	20,333	17,655	15,869
Above 10 km to 20 km	RM/year	35,544	30,490	27,193
Above 20 km to 30 km	RM/year	55,826	47,604	42,290
Above 30 km to 40 km	RM/year	76,108	64,718	57,388
Above 40 km to 50 km	RM/year	96,389	81,831	72,485
Above 50 km to 60 km	RM/year	116,671	98,945	87,583
Above 60 km	RM/km/year	2,028	1,711	1,510

Gigabit Ethernet (1000 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	12,730	11,932	11,229
Above 0 to 5 km	RM/year	24,851	22,160	20,252
Above 5 km to 10 km	RM/year	48,609	42,207	37,938
Above 10 km to 20 km	RM/year	84,973	72,891	65,007
Above 20 km to 30 km	RM/year	133,459	113,803	101,100
Above 30 km to 40 km	RM/year	181,945	154,716	137,193
Above 40 km to 50 km	RM/year	230,431	195,628	173,286
Above 50 km to 60 km	RM/year	278,916	236,541	209,378
Above 60 km	RM/km/year	4,849	4,091	3,609

10 Gigabit Ethernet (10,000 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	30,432	28,524	26,844
Above 0 to 5 km	RM/year	59,410	52,976	48,415
Above 5 km to 10 km	RM/year	116,206	100,901	90,695
Above 10 km to 20 km	RM/year	203,140	174,255	155,408
Above 20 km to 30 km	RM/year	319,051	272,061	241,692
Above 30 km to 40 km	RM/year	434,962	369,868	327,977
Above 40 km to 50 km	RM/year	550,874	467,674	414,261
Above 50 km to 60 km	RM/year	666,785	565,480	500,546
Above 60 km	RM/km/year	11,591	9,781	8,628

Source: Fixed Model

Table 6: Wholesale Local Leased Circuit Service Final Prices (Peninsular Malaysia)

64 kb/s leased circuit

	Units	2013	2014	2015
Installation	RM	385.04	349.58	318.69
Port	RM/year	538.01	499.91	480.39
Tail	RM/km/year	217.12	221.01	225.34
Trunk Segment				
Through-Connection	RM/year	135	127	119
Above 0 to 5 km	RM/year	264	236	215
Above 5 km to 10 km	RM/year	517	449	403
Above 10 km to 20 km	RM/year	904	775	691
Above 20 km to 30 km	RM/year	1,419	1,210	1,075
Above 30 km to 40 km	RM/year	1,935	1,645	1,459
Above 40 km to 50 km	RM/year	2,451	2,080	1,843
Above 50 km to 60 km	RM/year	2,966	2,516	2,227
Above 60 km	RM/km/year	52	44	38

E1 (2 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	385.04	349.58	318.69
Port	RM/year	3,934.15	3,655.52	3,512.82
Tail	RM/km/year	1,587.65	1,616.14	1,647.78
Trunk Segment				
Through-Connection	RM/year	990	928	873
Above 0 to 5 km	RM/year	1,933	1,723	1,575
Above 5 km to 10 km	RM/year	3,780	3,282	2,950
Above 10 km to 20 km	RM/year	6,608	5,669	5,055
Above 20 km to 30 km	RM/year	10,379	8,850	7,862
Above 30 km to 40 km	RM/year	14,149	12,032	10,669
Above 40 km to 50 km	RM/year	17,920	15,213	13,476
Above 50 km to 60 km	RM/year	21,690	18,395	16,283
Above 60 km	RM/km/year	377	318	281

E3 (34 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	1,949.27	1,769.77	1,613.35
Port	RM/year	19,916.63	18,506.05	17,783.64
Tail	RM/km/year	8,037.48	8,181.70	8,341.91
Trunk Segment				
Through-Connection	RM/year	5,012	4,697	4,421
Above 0 to 5 km	RM/year	9,784	8,724	7,973
Above 5 km to 10 km	RM/year	19,137	16,617	14,936
Above 10 km to 20 km	RM/year	33,454	28,697	25,593
Above 20 km to 30 km	RM/year	52,542	44,804	39,803
Above 30 km to 40 km	RM/year	71,631	60,911	54,012
Above 40 km to 50 km	RM/year	90,719	77,018	68,222
Above 50 km to 60 km	RM/year	109,808	93,125	82,431
Above 60 km	RM/km/year	1,909	1,611	1,421

STM-1 (155 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	4,345.65	3,945.48	3,596.74
Port	RM/year	44,401.49	41,256.79	39,646.26
Tail	RM/km/year	17,918.49	18,240.03	18,597.18
Trunk Segment				
Through-Connection	RM/year	11,173	10,472	9,856
Above 0 to 5 km	RM/year	21,812	19,449	17,775
Above 5 km to 10 km	RM/year	42,664	37,044	33,297
Above 10 km to 20 km	RM/year	74,580	63,976	57,056
Above 20 km to 30 km	RM/year	117,136	99,884	88,734
Above 30 km to 40 km	RM/year	159,691	135,792	120,413
Above 40 km to 50 km	RM/year	202,247	171,701	152,091
Above 50 km to 60 km	RM/year	244,802	207,609	183,769
Above 60 km	RM/km/year	4,256	3,591	3,168

STM-4 (622 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	9,777.71	8,877.32	8,092.66
Port	RM/year	99,903.36	92,827.77	89,204.09
Tail	RM/km/year	40,316.61	41,040.06	41,843.65
Trunk Segment				
Through-Connection	RM/year	25,139	23,563	22,175
Above 0 to 5 km	RM/year	49,076	43,761	39,994
Above 5 km to 10 km	RM/year	95,993	83,350	74,919
Above 10 km to 20 km	RM/year	167,806	143,945	128,376
Above 20 km to 30 km	RM/year	263,555	224,739	199,653
Above 30 km to 40 km	RM/year	359,305	305,533	270,929
Above 40 km to 50 km	RM/year	455,055	386,327	342,205
Above 50 km to 60 km	RM/year	550,805	467,121	413,481
Above 60 km	RM/km/year	9,575	8,079	7,128

Ethernet (10 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	866.34	786.57	717.04
Port	RM/year	8,851.84	8,224.91	7,903.84
Tail	RM/km/year	3,572.21	3,636.31	3,707.51
Trunk Segment				
Through-Connection	RM/year	2,227	2,088	1,965
Above 0 to 5 km	RM/year	4,348	3,877	3,544
Above 5 km to 10 km	RM/year	8,505	7,385	6,638
Above 10 km to 20 km	RM/year	14,868	12,754	11,375
Above 20 km to 30 km	RM/year	23,352	19,913	17,690
Above 30 km to 40 km	RM/year	31,836	27,071	24,005
Above 40 km to 50 km	RM/year	40,320	34,230	30,321
Above 50 km to 60 km	RM/year	48,803	41,389	36,636
Above 60 km	RM/km/year	848	716	632

Fast Ethernet (100 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	2,071.10	1,880.38	1,714.18
Port	RM/year	21,161.43	19,662.68	18,895.12
Tail	RM/km/year	8,539.82	8,693.06	8,863.28
Trunk Segment				
Through-Connection	RM/year	5,325	4,991	4,697
Above 0 to 5 km	RM/year	10,395	9,269	8,471
Above 5 km to 10 km	RM/year	20,333	17,655	15,869
Above 10 km to 20 km	RM/year	35,544	30,490	27,193
Above 20 km to 30 km	RM/year	55,826	47,604	42,290
Above 30 km to 40 km	RM/year	76,108	64,718	57,388
Above 40 km to 50 km	RM/year	96,389	81,831	72,485
Above 50 km to 60 km	RM/year	116,671	98,945	87,583
Above 60 km	RM/km/year	2,028	1,711	1,510

Gigabit Ethernet (1000 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	4,951.24	4,495.30	4,097.96
Port	RM/year	50,589.06	47,006.12	45,171.16
Tail	RM/km/year	20,415.52	20,781.86	21,188.79
Trunk Segment				
Through-Connection	RM/year	12,730	11,932	11,229
Above 0 to 5 km	RM/year	24,851	22,160	20,252
Above 5 km to 10 km	RM/year	48,609	42,207	37,938
Above 10 km to 20 km	RM/year	84,973	72,891	65,007
Above 20 km to 30 km	RM/year	133,459	113,803	101,100
Above 30 km to 40 km	RM/year	181,945	154,716	137,193
Above 40 km to 50 km	RM/year	230,431	195,628	173,286
Above 50 km to 60 km	RM/year	278,916	236,541	209,378
Above 60 km	RM/km/year	4,849	4,091	3,609

10 Gigabit Ethernet (10,000 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	11,836.56	10,746.57	9,796.70
Port	RM/year	120,939.52	112,374.06	107,987.35
Tail	RM/km/year	48,805.87	49,681.66	50,654.46
Trunk Segment				
Through-Connection	RM/year	30,432	28,524	26,844
Above 0 to 5 km	RM/year	59,410	52,976	48,415
Above 5 km to 10 km	RM/year	116,206	100,901	90,695
Above 10 km to 20 km	RM/year	203,140	174,255	155,408
Above 20 km to 30 km	RM/year	319,051	272,061	241,692
Above 30 km to 40 km	RM/year	434,962	369,868	327,977
Above 40 km to 50 km	RM/year	550,874	467,674	414,261
Above 50 km to 60 km	RM/year	666,785	565,480	500,546
Above 60 km	RM/km/year	11,591	9,781	8,628

Source: Fixed Model

For Interconnect Service and Connection Services to the Submarine Cable System, the following regulated prices will apply.

Table 7: Interconnect Link Service Final Prices

For each pair of fibre cable

	Units	2013	2014	2015
Link employing a fibre cable	RM/km/year	481.13	387.69	332.24

Source: Fixed Model

Table 8: Connection Services to the Submarine Cable System Final Prices

For each pair of fibre cable

	Units	2013	2014	2015
Link employing a fibre cable	RM/km/year	273.55	273.71	280.36

Source: Fixed Model

Sacofa provided extensive data on the differences in materials cost and construction costs between East Malaysia and Peninsular Malaysia. While this data does not translate directly into transmission costs, it suggests that the distance-related costs in East Malaysia are approximately 20% higher than in Peninsular Malaysia for common transmission routes. The SKMM re-examined the transmission data responses provided by Celcom Timur, Fiberail, Fibrecomm, Sacofa and Telekom Malaysia. From this re-examination, it appeared that there was little difference in equipment prices between Peninsular Malaysia and East Malaysia but the distance-related costs appeared to be higher. The average distance-related costs experienced by Celcom Timur, for example, were approximately 20% higher than the average distance-related costs used in the Fixed Core and Transmission model. The overall result of this analysis was that a mark-up of 20% on the distance-related costs for transmission in East Malaysia is appropriate.

The SKMM has calculated revised regulated prices for East Malaysia on the basis of its new analysis. The SKMM notes that this still results in a reduction from the 2008 regulated prices.

The following tables show the regulated prices for Transmission Service and Wholesale Local Leased Circuit Service for services wholly within East Malaysia.

Table 9: Transmission Service Final Prices (East Malaysia)

64 kb/s leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	136	128	120
Above 0 to 5 km	RM/year	291	258	235
Above 5 km to 10 km	RM/year	594	514	461
Above 10 km to 20 km	RM/year	1,058	906	806
Above 20 km to 30 km	RM/year	1,677	1,428	1,267
Above 30 km to 40 km	RM/year	2,296	1,950	1,728
Above 40 km to 50 km	RM/year	2,915	2,472	2,188
Above 50 km to 60 km	RM/year	3,533	2,994	2,649
Above 60 km	RM/km/year	62	52	46

E1 (2 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	997	934	879
Above 0 to 5 km	RM/year	2,129	1,889	1,721
Above 5 km to 10 km	RM/year	4,346	3,760	3,371
Above 10 km to 20 km	RM/year	7,739	6,623	5,897
Above 20 km to 30 km	RM/year	12,264	10,441	9,266
Above 30 km to 40 km	RM/year	16,789	14,259	12,634
Above 40 km to 50 km	RM/year	21,313	18,077	16,002
Above 50 km to 60 km	RM/year	25,838	21,895	19,370
Above 60 km	RM/km/year	452	382	337

E3 (34 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	5,050	4,730	4,449
Above 0 to 5 km	RM/year	10,776	9,562	8,712
Above 5 km to 10 km	RM/year	22,000	19,033	17,067
Above 10 km to 20 km	RM/year	39,180	33,529	29,856
Above 20 km to 30 km	RM/year	62,086	52,857	46,907
Above 30 km to 40 km	RM/year	84,993	72,186	63,959
Above 40 km to 50 km	RM/year	107,899	91,514	81,010
Above 50 km to 60 km	RM/year	130,805	110,842	98,062
Above 60 km	RM/km/year	2,291	1,933	1,705

STM-1 (155 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	11,258	10,544	9,919
Above 0 to 5 km	RM/year	24,024	21,317	19,422
Above 5 km to 10 km	RM/year	49,047	42,431	38,049
Above 10 km to 20 km	RM/year	87,347	74,748	66,560
Above 20 km to 30 km	RM/year	138,413	117,838	104,574
Above 30 km to 40 km	RM/year	189,480	160,928	142,588
Above 40 km to 50 km	RM/year	240,547	204,018	180,601
Above 50 km to 60 km	RM/year	291,613	247,108	218,615
Above 60 km	RM/km/year	5,107	4,309	3,801

STM-4 (622 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	25,330	23,724	22,318
Above 0 to 5 km	RM/year	54,055	47,962	43,700
Above 5 km to 10 km	RM/year	110,356	95,469	85,611
Above 10 km to 20 km	RM/year	196,531	168,184	149,759
Above 20 km to 30 km	RM/year	311,430	265,136	235,291
Above 30 km to 40 km	RM/year	426,330	362,089	320,822
Above 40 km to 50 km	RM/year	541,230	459,041	406,353
Above 50 km to 60 km	RM/year	656,129	555,994	491,885
Above 60 km	RM/km/year	11,490	9,695	8,553

Ethernet (10 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	2,244	2,102	1,977
Above 0 to 5 km	RM/year	4,789	4,250	3,872
Above 5 km to 10 km	RM/year	9,778	8,459	7,585
Above 10 km to 20 km	RM/year	17,413	14,902	13,269
Above 20 km to 30 km	RM/year	27,594	23,492	20,848
Above 30 km to 40 km	RM/year	37,775	32,083	28,426
Above 40 km to 50 km	RM/year	47,955	40,673	36,005
Above 50 km to 60 km	RM/year	58,136	49,263	43,583
Above 60 km	RM/km/year	1,018	859	758

Fast Ethernet (100 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	5,365	5,025	4,727
Above 0 to 5 km	RM/year	11,450	10,159	9,257
Above 5 km to 10 km	RM/year	23,375	20,222	18,134
Above 10 km to 20 km	RM/year	41,629	35,624	31,722
Above 20 km to 30 km	RM/year	65,967	56,161	49,839
Above 30 km to 40 km	RM/year	90,305	76,697	67,956
Above 40 km to 50 km	RM/year	114,643	97,234	86,073
Above 50 km to 60 km	RM/year	138,981	117,770	104,191
Above 60 km	RM/km/year	2,434	2,054	1,812

Gigabit Ethernet (1000 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	12,827	12,013	11,301
Above 0 to 5 km	RM/year	27,372	24,287	22,129
Above 5 km to 10 km	RM/year	55,882	48,344	43,352
Above 10 km to 20 km	RM/year	99,519	85,165	75,835
Above 20 km to 30 km	RM/year	157,702	134,260	119,146
Above 30 km to 40 km	RM/year	215,885	183,354	162,458
Above 40 km to 50 km	RM/year	274,068	232,449	205,769
Above 50 km to 60 km	RM/year	332,251	281,544	249,081
Above 60 km	RM/km/year	5,818	4,909	4,331

10 Gigabit Ethernet (10,000 Mb/s) leased circuit

	Units	2013	2014	2015
Trunk Segment				
Through-Connection	RM/year	30,664	28,720	27,017
Above 0 to 5 km	RM/year	65,437	58,062	52,902
Above 5 km to 10 km	RM/year	133,593	115,572	103,637
Above 10 km to 20 km	RM/year	237,913	203,597	181,293
Above 20 km to 30 km	RM/year	377,007	320,965	284,835
Above 30 km to 40 km	RM/year	516,100	438,332	388,376
Above 40 km to 50 km	RM/year	655,194	555,699	491,917
Above 50 km to 60 km	RM/year	794,287	673,067	595,458
Above 60 km	RM/km/year	13,909	11,737	10,354

Source: Fixed Model; Ovum calculation

Table 10: Wholesale Local Leased Circuit Service Final Prices (East Malaysia)

64 kb/s leased circuit

	Units	2013	2014	2015
Installation	RM	462.05	419.50	382.42
Port	RM/year	538.01	499.91	480.39
Tail	RM/km/year	260.54	265.22	270.41
Trunk Segment				
Through-Connection	RM/year	136	128	120
Above 0 to 5 km	RM/year	291	258	235
Above 5 km to 10 km	RM/year	594	514	461
Above 10 km to 20 km	RM/year	1,058	906	806
Above 20 km to 30 km	RM/year	1,677	1,428	1,267
Above 30 km to 40 km	RM/year	2,296	1,950	1,728
Above 40 km to 50 km	RM/year	2,915	2,472	2,188
Above 50 km to 60 km	RM/year	3,533	2,994	2,649
Above 60 km	RM/km/year	62	52	46

E1 (2 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	462.05	419.50	382.42
Port	RM/year	3,934.15	3,655.52	3,512.82
Tail	RM/km/year	1,905.18	1,939.37	1,977.34
Trunk Segment				
Through-Connection	RM/year	997	934	879
Above 0 to 5 km	RM/year	2,129	1,889	1,721
Above 5 km to 10 km	RM/year	4,346	3,760	3,371
Above 10 km to 20 km	RM/year	7,739	6,623	5,897
Above 20 km to 30 km	RM/year	12,264	10,441	9,266
Above 30 km to 40 km	RM/year	16,789	14,259	12,634
Above 40 km to 50 km	RM/year	21,313	18,077	16,002
Above 50 km to 60 km	RM/year	25,838	21,895	19,370
Above 60 km	RM/km/year	452	382	337

E3 (34 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	2,339.13	2,123.73	1,936.01
Port	RM/year	19,916.63	18,506.05	17,783.64
Tail	RM/km/year	9,644.97	9,818.04	10,010.29
Trunk Segment				
Through-Connection	RM/year	5,050	4,730	4,449
Above 0 to 5 km	RM/year	10,776	9,562	8,712
Above 5 km to 10 km	RM/year	22,000	19,033	17,067
Above 10 km to 20 km	RM/year	39,180	33,529	29,856
Above 20 km to 30 km	RM/year	62,086	52,857	46,907
Above 30 km to 40 km	RM/year	84,993	72,186	63,959
Above 40 km to 50 km	RM/year	107,899	91,514	81,010
Above 50 km to 60 km	RM/year	130,805	110,842	98,062
Above 60 km	RM/km/year	2,291	1,933	1,705

STM-1 (155 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	5,214.78	4,734.57	4,316.09
Port	RM/year	44,401.49	41,256.79	39,646.26
Tail	RM/km/year	21,502.19	21,888.03	22,316.61
Trunk Segment				
Through-Connection	RM/year	11,258	10,544	9,919
Above 0 to 5 km	RM/year	24,024	21,317	19,422
Above 5 km to 10 km	RM/year	49,047	42,431	38,049
Above 10 km to 20 km	RM/year	87,347	74,748	66,560
Above 20 km to 30 km	RM/year	138,413	117,838	104,574
Above 30 km to 40 km	RM/year	189,480	160,928	142,588
Above 40 km to 50 km	RM/year	240,547	204,018	180,601
Above 50 km to 60 km	RM/year	291,613	247,108	218,615
Above 60 km	RM/km/year	5,107	4,309	3,801

STM-4 (622 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	11,733.25	10,652.78	9,711.20
Port	RM/year	99,903.36	92,827.77	89,204.09
Tail	RM/km/year	48,379.93	49,248.07	50,212.38
Trunk Segment				
Through-Connection	RM/year	25,330	23,724	22,318
Above 0 to 5 km	RM/year	54,055	47,962	43,700
Above 5 km to 10 km	RM/year	110,356	95,469	85,611
Above 10 km to 20 km	RM/year	196,531	168,184	149,759
Above 20 km to 30 km	RM/year	311,430	265,136	235,291
Above 30 km to 40 km	RM/year	426,330	362,089	320,822
Above 40 km to 50 km	RM/year	541,230	459,041	406,353
Above 50 km to 60 km	RM/year	656,129	555,994	491,885
Above 60 km	RM/km/year	11,490	9,695	8,553

Ethernet (10 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	1,039.61	943.88	860.45
Port	RM/year	8,851.84	8,224.91	7,903.84
Tail	RM/km/year	4,286.65	4,363.58	4,449.02
Trunk Segment				
Through-Connection	RM/year	2,244	2,102	1,977
Above 0 to 5 km	RM/year	4,789	4,250	3,872
Above 5 km to 10 km	RM/year	9,778	8,459	7,585
Above 10 km to 20 km	RM/year	17,413	14,902	13,269
Above 20 km to 30 km	RM/year	27,594	23,492	20,848
Above 30 km to 40 km	RM/year	37,775	32,083	28,426
Above 40 km to 50 km	RM/year	47,955	40,673	36,005
Above 50 km to 60 km	RM/year	58,136	49,263	43,583
Above 60 km	RM/km/year	1,018	859	758

Fast Ethernet (100 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	2,485.33	2,256.46	2,057.02
Port	RM/year	21,161.43	19,662.68	18,895.12
Tail	RM/km/year	10,247.79	10,431.68	10,635.94
Trunk Segment				
Through-Connection	RM/year	5,365	5,025	4,727
Above 0 to 5 km	RM/year	11,450	10,159	9,257
Above 5 km to 10 km	RM/year	23,375	20,222	18,134
Above 10 km to 20 km	RM/year	41,629	35,624	31,722
Above 20 km to 30 km	RM/year	65,967	56,161	49,839
Above 30 km to 40 km	RM/year	90,305	76,697	67,956
Above 40 km to 50 km	RM/year	114,643	97,234	86,073
Above 50 km to 60 km	RM/year	138,981	117,770	104,191
Above 60 km	RM/km/year	2,434	2,054	1,812

Gigabit Ethernet (1000 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	5,941.48	5,394.36	4,917.56
Port	RM/year	50,589.06	47,006.12	45,171.16
Tail	RM/km/year	24,498.63	24,938.23	25,426.54
Trunk Segment				
Through-Connection	RM/year	12,827	12,013	11,301
Above 0 to 5 km	RM/year	27,372	24,287	22,129
Above 5 km to 10 km	RM/year	55,882	48,344	43,352
Above 10 km to 20 km	RM/year	99,519	85,165	75,835
Above 20 km to 30 km	RM/year	157,702	134,260	119,146
Above 30 km to 40 km	RM/year	215,885	183,354	162,458
Above 40 km to 50 km	RM/year	274,068	232,449	205,769
Above 50 km to 60 km	RM/year	332,251	281,544	249,081
Above 60 km	RM/km/year	5,818	4,909	4,331

10 Gigabit Ethernet (10,000 Mb/s) leased circuit

	Units	2013	2014	2015
Installation	RM	14,203.87	12,895.89	11,756.03
Port	RM/year	120,939.52	112,374.06	107,987.35
Tail	RM/km/year	58,567.05	59,617.99	60,785.36
Trunk Segment				
Through-Connection	RM/year	30,664	28,720	27,017
Above 0 to 5 km	RM/year	65,437	58,062	52,902
Above 5 km to 10 km	RM/year	133,593	115,572	103,637
Above 10 km to 20 km	RM/year	237,913	203,597	181,293
Above 20 km to 30 km	RM/year	377,007	320,965	284,835
Above 30 km to 40 km	RM/year	516,100	438,332	388,376
Above 40 km to 50 km	RM/year	655,194	555,699	491,917
Above 50 km to 60 km	RM/year	794,287	673,067	595,458
Above 60 km	RM/km/year	13,909	11,737	10,354

Source: Fixed Model

6. FIXED ACCESS SERVICES

6.1 Overview

The SKMM developed a Fixed Access model using the building-block methodology to determine costs and prices for fixed access (copper-based) services. Chapter 11 of the PI Paper described the model and the changes made after model viewing. It then set out proposed regulated prices for Wholesale Line Rental Service, Full Access Service, Line Sharing Service and Digital Subscriber Line Resale Service, and the rationale for not setting prices for Sub-loop Service.

The PI Paper also canvassed the possibility of using a “retail-minus” methodology for setting the prices for Digital Subscriber Line Resale Service and sought comment on this matter.

6.2 Summary of submissions received

Question 17

The SKMM seeks comments on which fixed access services, if any, should be subject to price regulation and on the reasonableness of the proposed maximum regulated prices.

Deol & Gill questioned the technical specifications and the inclusion of a handover distribution frame for the costing of Wholesale Line Rental Service, and further, also requested clarification whether handover distribution frame is included in the costing of Full Access Service. With regards to Line Sharing Service, it sought clarification whether the cost of DSLAM is included. Deol & Gill also believed that the SKMM should set a regulated price for Sub-loop Service. Further, it sought clarification on the charges included in the proposed prices for Digital Subscriber Line Resale Service and also suggested for the proposed prices to include higher bandwidth at 8 Mb/s downstream.

DiGi was of the view that all fixed access services should be subject to price regulation to encourage competition in the fixed broadband sector. This includes both copper based services as well as the full range of HSBB services and not just “HSBB Service without QoS – Type 4”.

Maxis welcomed the SKMM’s decision to regulate the fixed access services and wholesale broadband on the legacy network, and took the stronger view that Bitstream and Digital Subscriber Line Resale services must remain available on an appropriately price-regulated basis throughout the country, with no exception for HSBB areas.

Maxis reiterated the need for non-price regulation to support access seekers in their dealings with access providers and the need for access seekers to gain access to communication equipment (e.g. the Main Distribution Frame in an unbundled exchange), without which wholesale broadband services cannot be effectively taken up.

Maxis noted that the cost allocation for the Line Sharing service is inconsistent with international best practice, specifically that the costs of the line have been shared equally between telephony and shared access, leading to a significantly higher line sharing cost as a percentage of retail line rental compared to benchmark countries. Maxis noted that this does not allow access seekers to profitably deliver a service that can compete with Streamyx on price, and that it would allow Telekom Malaysia to over-recover the costs of the access line: once through the retail line rental price, which fully covers the costs of the physical line, and once through the line sharing charges, which recover a further 50% of the costs of the line.

Maxis suggested that the SKMM reviews the allocation of line costs to the line sharing service, limiting those to the purely incremental costs of provision and excluding the costs that would be incurred regardless to provide the telephony line service.

Maxis noted that the PI Paper states in several instances that the fixed access service was developed based on data provided by Telekom Malaysia, which the SKMM appears to have taken as is, with no indication that an independent assessment has been carried out to ensure the reasonableness of these inputs.

Maxis noted that the proposed wholesale prices are higher than retail prices, which raises questions on the accuracy of the models. Maxis noted that this problem affects particularly the Bitstream, Wholesale Line Rental and Digital Subscriber Line Resale services and that, based on the proposed prices, access seekers cannot compete with Telekom Malaysia either from a standalone or from a bundled perspective. Maxis also noted that the PI Paper sets Digital Subscriber Line Resale line rental prices, separated from the data usage, which will be charged based on the volume of data consumed by the end user, while Telekom Malaysia currently offers high-speed broadband Streamyx products (>1Mbit/s) with no volume cap on data usage, making it difficult for other access seekers to compete with its retail offering.

Telekom Malaysia believed that the proposed prices were unreasonable: it had calculated higher prices using its internal LRIC model. It questioned the basis for the forecasts used in the SKMM cost model and suggested that the forecasts used were in general too high and not conservative. Telekom Malaysia believed that fixed access services should be priced on a commercial basis.

In addition, Telekom Malaysia believed that the cost model results showed that it was incurring an access deficit and that there should be a compensation mechanism.

TIME expressed the view that fixed access services would not grow in Malaysia, even if the SKMM set suitable prices, because of the rollout of the HSBB. TIME was therefore of the view that prices for these services should be left for commercial negotiation.

Question 18

The SKMM seeks comments on the alternative of using a retail-minus methodology for setting regulated prices for Digital Subscriber Line Resale Service and requests information on what would be the appropriate “minus” factor to be used in this methodology.

DiGi considered that, while it is important that basic principles of cost-based regulation are adopted to facilitate competition, efficiency, and at the same time promote innovation, the retail-minus approach could be an effective alternative to cost-based pricing to allow competition, while maintaining retail prices. DiGi noted that the retail minus approach may be subjective (in that it requires appropriate forward looking retail prices in an economically competitive environment to be established), as compared to a bottom-up cost based methodology, but it provides a better protection against potential margin squeeze by the incumbent.

Maxis was in favour of the proposal to use a retail-minus methodology to set the regulated price for Digital Subscriber Line Resale and Bitstream services, as the current approach in determining Digital Subscriber Line Resale prices leads to excessive prices, economically impossible to sustain for access seekers. Supporting this, Maxis stated that well-designed wholesale pricing needs to ensure that the access provider’s retail proposition is replicable by efficient access seekers and that, to achieve this, it is essential to prohibit margin squeeze at the retail level, as well as requiring an understanding of additional costs to carry traffic from the wholesale products to the end-user premises for both access seekers and access providers.

Maxis was of the view that to avoid margin squeeze, the retail-minus approach must take into account different scales between the access provider and access seekers and that, in determining an efficiently sufficient margin, the SKMM needs to ensure an access seeker to be profitable under its own scale, which is usually smaller compared to that of the access provider. Maxis proposed that if a retail-minus approach is adopted, the minus factor should be based on the margin of access seekers.

Telekom Malaysia believed that it would not be appropriate to use a retail-minus methodology due to inherent practical difficulties in setting an appropriate price. It gave an example from New Zealand on Bitstream prices to illustrate the difficulties.

Telekom Malaysia also believed that a retail-minus methodology would be untenable in the presence of an access deficit.

6.3 Model update

Telekom Malaysia provided new full-year operational cost data for 2011. This was used to update the operational costs in the Fixed Access model. The effect was to lower the cost base by a small amount.

6.4 SKMM's final views

The SKMM recognises that, to date, the industry has not yet been effective in establishing a competitive market for fixed broadband services, whether by Fixed Access services, Bitstream services or HSBB wholesale services.

The SKMM notes TIME's contention that a competitive market in copper-based services will not be established in any case, given the rollout of the HSBB.

The SKMM notes the concern of several respondents that the calculated prices are too high for effective competition against Telekom Malaysia's retail offerings. The SKMM maintains that it has carefully analysed the required cost base for fixed access and has made appropriate estimates of future service demands.

On the issue of sharing line costs, the SKMM notes that there is no necessity for another working service on a copper line, so that the line costs are part of the cost base for Line Sharing Service. This is different from the situation in Australia, where a PSTN voice service must be present on the line.

The SKMM's view is that setting regulated cost based prices for Fixed Access services will not lead to competitive services. The SKMM therefore, has determined not to regulate cost based Fixed Access prices.

The SKMM notes the preference by some potential access seekers for retail-minus pricing for Digital Subscriber Line Resale service. It recognises, however, that there is only high level data available to determine the current minus factor which does not provide sufficient granularity to calculate retail minus factors on a service specific basis, nor to

properly identify avoidable costs. This will be further complicated when establishing forward-looking retail prices. These factors make it hard to proceed with a retail-minus methodology at this stage.

Table 11: Wholesale Line Rental Service Indicative Prices

	Units	2013	2014	2015
Installation (Provisioning)	RM	581.81	530.09	478.46
Line Rental	RM/month	36.08	35.14	33.82

Source: Fixed Access Model

Table 12: Full Access Service Indicative Prices

	Units	2013	2014	2015
Installation (Set-up & cutover)	RM	581.81	530.09	478.46
Line Rental	RM/month	34.98	34.98	33.65

Source: Fixed Access Model

Table 13: Line Sharing Service Indicative Prices

	Units	2013	2014	2015
Installation	RM	290.91	265.05	239.23
Line Rental	RM/month	17.49	17.49	16.83

Source: Fixed Access Model

Table 14: Digital Subscriber Line Resale Service Indicative Prices

	Units	2013	2014	2015
Line Rental				
Downstream 384 kb/s	RM/month	10.12	9.85	9.48
Downstream 512 kb/s	RM/month	11.97	11.66	11.22
Downstream 1 Mb/s	RM/month	17.96	17.49	16.83
Downstream 2 Mb/s	RM/month	26.94	26.23	25.24
Downstream 4 Mb/s	RM/month	40.40	39.35	37.86

Source: Fixed Access Model

Table 15: Sub-loop Service Indicative Prices

	Units	2013	2014	2015
Installation (Set-up & cutover)	RM	581.81	530.09	478.46
Line Rental	RM/month	4.49	4.37	4.21

Source: Fixed Access Model

7. BITSTREAM SERVICES

7.1 Overview

Chapter 12 of the PI Paper described the costing and pricing of Bitstream services using components calculated in the Fixed Core and Transmission Model and the Fixed Access model. It then set out proposed regulated prices for Bitstream Service.

The PI Paper also canvassed the option of using a “retail-minus” methodology for setting Bitstream prices and sought comments on this matter.

7.2 Summary of submissions received

Question 19

The SKMM seeks comments on its proposed approach to regulating prices for Bitstream Services and on the appropriateness of the proposed prices for some Bitstream Services.

Celcom considered that the approach for regulating Bitstream prices is appropriate and reflects the general principles that are applicable.

Deol & Gill questioned the selection of the downstream rates for proposed price regulation. It suggested that there may be take-up of higher downstream rates. It also sought clarification of the charges included in the regulated prices.

DiGi noted that this service is a vital means for broadband service providers to gain access to customers, thus contributing to a competitive industry for the benefit of the customers. DiGi, however, urged the SKMM to consider setting prices for higher bit rates which are above 1 Mbps as these are more relevant to meet the demands of the end customers.

Maxis was of the view that defining the Bitstream product as consisting of the access provider (e.g. Telekom Malaysia) providing interconnection at the BRAS level, at layer 2 using an Ethernet interface is a good compromise in terms of architecture, but that Telekom Malaysia must be compelled to provide this service as intended, and to provide the necessary co-location and other ancillary services required to take up the service.

Maxis was concerned that the SKMM proposes to regulate only Bitstream access to two levels of end-user bandwidth, namely 512 kbit/s and 1 Mbit/s. Maxis noted that Telekom Malaysia’s current offers range from 1 Mbit/s to 4 Mbit/s, and questioned the

SKMM's assertion that 512 kbit/s and 1 Mbit/s are the most popular packages. Maxis noted that by restricting regulation to two products, it would provide a clear incentive for Telekom Malaysia to upgrade its DSLAM ports to offer at least 2Mbit/s, enabling it to argue that the regulated products cannot be offered any longer, precluding access to access seekers.

Maxis was also concerned that the proposed prices are in excess of Telekom Malaysia's current retail prices, which suggested the costing process may have overstated some costs. Maxis noted that an access seeker trying to replicate Telekom Malaysia's entry-level product would incur total costs two to three times higher than Telekom Malaysia's retail prices. Maxis noted that the port charge is particularly excessive, and has not been fully explained in the PI Paper, nor in the public clarification session. Maxis requested that the SKMM review the inputs used in the fixed access model very carefully, and in the interim impose regulated prices based on retail minus, calculated on the basis of bundled prices, and supported by strict non-price conditions.

Packet One highlighted that the proposed regulated pricing based on distance is not reflective of industry pricing practice for IP-based networks.

Telekom Malaysia questioned the use of downstream bit rates in setting regulated prices for Bitstream Services. It suggested that its costs for providing line rental as part of the service was the same for all bit rates and was not in its control. For Bitstream without network service, it claimed the only speed control was at 2 Mb/s and above.

Telekom Malaysia also claimed that Bitstream Service has been wrongly included in the Fixed Access cost model to share the copper loop with the access provider's PSTN service. This seems to contradict the MSA, as the access provider is prohibited from requiring the end user of the access seeker to acquire a retail service when the access seeker is acquiring the Bitstream Service.

TIME expressed the view that Bitstream services would not grow in Malaysia, even if the SKMM set suitable prices, because of the rollout of the HSBB. TIME was therefore of the view that prices for these services should be left for commercial negotiation.

Question 20

The SKMM seeks comments on the alternative of using a retail-minus methodology for setting regulated prices for Bitstream Services and requests information on what would be the appropriate "minus" factor to be used in this methodology.

Celcom considered that the SKMM should continue with a cost-based approach to setting regulated prices for Bitstream Services and not adopt a retail-minus methodology.

DiGi considered that it would be appropriate to consider a retail-minus methodology, especially in this case where the SKMM observed that the cost-based prices using the LRIC method is higher than retail prices. DiGi suggested that the SKMM should review the cause of this – to determine whether it is due to data integrity or pricing practices of the sole provider of this wholesale service.

Maxis' response to Question 18 also applies to Question 20.

Packet One's opinion was that the appropriate retail price should be established in the first place, allowing the relevant minus factor to be determined.

Telekom Malaysia did not support the use of a retail-minus methodology for Bitstream Services for the same reasons as cited in answer to Question 18. It noted that the use of retail-minus had been generally declining in Europe.

7.3 SKMM's final views

On Telekom Malaysia's assertion that Bitstream Service has been wrongly included in the Fixed Access cost model to share the copper loop with the access provider's PSTN service, the SKMM notes that this is a misunderstanding of the model by Telekom Malaysia. In allocating the costs, the SKMM has taken into consideration the naked DSL requirements in the MSA. Hence, the Bitstream service attracts a cost allocation of only part of the line cost, as there may (or may not) be other services also provided on the same line. For the purposes of regulatory costing, it is appropriate to allocate only a portion of the line cost.

The SKMM notes the view of DiGi that the Bitstream service is a primary means for the development of competitive fixed broadband services. However, as noted by TIME, even with the setting of suitable Bitstream prices, the future growth is in HSBB network services.

For the reasons noted in section 6.4 in relation to other Fixed Access services, the SKMM's view is that setting regulated cost based prices for Bitstream services will not lead to competitive services. The SKMM therefore, has determined not to regulate cost based Bitstream service prices. The SKMM also notes that, similar to Digital Subscriber Line Resale service, it is not possible at this stage to proceed with a retail-minus methodology.

Table 16: Bitstream Service without Network Service Indicative Prices

Bitstream Line Charges

	Units	2013	2014	2015
Installation	RM	654.54	596.36	538.27
Port Rental				
384 kb/s downstream	RM/year	345.40	310.25	297.86
512 kb/s downstream	RM/year	612.05	549.76	527.82
1 Mb/s downstream	RM/year	1,555.14	1,424.53	1,394.76
2 Mb/s downstream	RM/year	2,029.35	1,870.05	1,841.97
4 Mb/s downstream	RM/year	2,503.56	2,315.57	2,289.18
Line Rental				
384 kb/s downstream	RM/month	9.85	9.85	9.48
512 kb/s downstream	RM/month	11.66	11.66	11.22
1 Mb/s downstream	RM/month	17.49	17.49	16.83
2 Mb/s downstream	RM/month	26.23	26.23	25.24
4 Mb/s downstream	RM/month	39.35	39.35	37.86

Source: Fixed Access Model, modified for 2013; Fixed Core Model

Table 17: Bitstream Network Service Indicative Prices

NxE1 Transmission

	Units	2013	2014	2015
Aggregation Network				
Through-Connection	RM/year	990	928	873
Above 0 to 5 km	RM/year	1,933	1,723	1,575
Above 5 km to 10 km	RM/year	3,780	3,282	2,950
Above 10 km to 20 km	RM/year	6,608	5,669	5,055
Above 20 km to 30 km	RM/year	10,379	8,850	7,862
Above 30 km to 40 km	RM/year	14,149	12,032	10,669
Above 40 km to 50 km	RM/year	17,920	15,213	13,476
Above 50 km to 60 km	RM/year	21,690	18,395	16,283
Above 60 km	RM/km/year	377	318	281

STM-1 Transmission

	Units	2013	2014	2015
Aggregation Network				
Through-Connection	RM/year	11,173	10,472	9,856
Above 0 to 5 km	RM/year	21,812	19,449	17,775
Above 5 km to 10 km	RM/year	42,664	37,044	33,297
Above 10 km to 20 km	RM/year	74,580	63,976	57,056
Above 20 km to 30 km	RM/year	117,136	99,884	88,734
Above 30 km to 40 km	RM/year	159,691	135,792	120,413
Above 40 km to 50 km	RM/year	202,247	171,701	152,091
Above 50 km to 60 km	RM/year	244,802	207,609	183,769
Above 60 km	RM/km/year	4,256	3,591	3,168

Gigabit Ethernet (1000 Mb/s)

	Units	2013	2014	2015
Aggregation Network				
Through-Connection	RM/year	12,730	11,932	11,229
Above 0 to 5 km	RM/year	24,851	22,160	20,252
Above 5 km to 10 km	RM/year	48,609	42,207	37,938
Above 10 km to 20 km	RM/year	84,973	72,891	65,007
Above 20 km to 30 km	RM/year	133,459	113,803	101,100
Above 30 km to 40 km	RM/year	181,945	154,716	137,193
Above 40 km to 50 km	RM/year	230,431	195,628	173,286
Above 50 km to 60 km	RM/year	278,916	236,541	209,378
Above 60 km	RM/km/year	4,849	4,091	3,609

10 Gigabit Ethernet (10,000 Mb/s)

	Units	2013	2014	2015
Aggregation Network				
Through-Connection	RM/year	30,432	28,524	26,844
Above 0 to 5 km	RM/year	59,410	52,976	48,415
Above 5 km to 10 km	RM/year	116,206	100,901	90,695
Above 10 km to 20 km	RM/year	203,140	174,255	155,408
Above 20 km to 30 km	RM/year	319,051	272,061	241,692
Above 30 km to 40 km	RM/year	434,962	369,868	327,977
Above 40 km to 50 km	RM/year	550,874	467,674	414,261
Above 50 km to 60 km	RM/year	666,785	565,480	500,546
Above 60 km	RM/km/year	11,591	9,781	8,628

Source: Fixed Core Model

8. HSBB SERVICES

8.1 Overview

The SKMM developed a HSBB model using the building-block methodology to determine costs and prices for HSBB wholesale services on the Access List. Chapter 13 of the PI Paper described the HSBB services and network model, together with the assumptions about network rollout and service take-up. After describing the asset base and depreciation schedule used in the model, the PI Paper requested feedback on these specific issues. The PI Paper described the changes made after model viewing and provided calculated prices for all regulated services.

The SKMM proposed to regulate the price of just one HSBB service at 10 Mb/s downstream and sought comments on this approach.

8.2 Summary of submissions received

There was one general comment about services on the HSBB network.

Celcom noted that the SKMM's proposed regulated HSBB rates are based on services at Open Systems Interconnection (OSI) Layer 2, while Telekom Malaysia's commercial offer includes some Layer 3 services. While Celcom did not see any in-principle issue with the continued provision of both regulated Layer 2 services and unregulated Layer 3 services, there would be a need to clarify the different service levels.

Question 21

The SKMM seeks comments on the forecast take-up and service demands for the HSBB network.

DiGi noted the SKMM's views regarding HSBB customer demand forecasts and that, in the absence of proper demand forecasts from Telekom Malaysia, the dominant HSBB provider, it is difficult to verify whether the results from the model are reflective of the real demand within the regulatory period (2013-2015). DiGi noted that for purposes of regulating the HSBB service as a means to increase broadband penetration, it would be ideal if the SKMM sought the necessary inputs from the dominant HSBB provider to ensure that regulated prices are set at a reasonable level.

Maxis welcomed the transparency of the SKMM's statements with regards to the HSBB forecast, and in particular that Telekom Malaysia did not provide any input. Maxis noted

that it appears that the ramp-up of demand for HSBB modelled by the SKMM understates the actual state of the market, which is likely to lead to an overestimate of costs in the early years.

Maxis noted that as of the first half of 2012, Telekom Malaysia reported 384,024 UniFi subscribers, with net additions of over 69,000 in Q2 2012, suggesting that Telekom Malaysia could add a further 140,000 customers onto the HSBB by the end of 2012, leading to a total of over 500,000, excluding lines sold to access seekers. Maxis noted that this is at odds with the forecast demand in the HSBB model, which had a 2012 average of 241,000.

Maxis disagreed with the SKMM's view that 'the copper access network will remain alongside the HSBB network for the period of this study' and the related assumption that only 30% of HSBB subscribers in 2015 will take a voice service. Maxis noted that, while the physical copper lines may be left in place (due to the cost of decommissioning), it is highly likely that subscribers will substitute their existing PSTN subscription with a voice + internet or even a triple-play bundle. Maxis noted two current market trends supporting this:

- Telekom Malaysia's and Maxis's current retail approach to provide bundles of services including fibre broadband and a phone line with bundled calls, and for UniFi also IPTV and VoD, meaning that 100% of fibre customers today are effectively voice and internet customers, with all of Telekom Malaysia's customers also IPTV and VoD users;
- this provides a strong incentive for users to disconnect their PSTN fixed line, which requires the payment of an additional line rental and offers limited benefits in terms of call prices. Maxis included statistics on Telekom Malaysia's number of lines showing the cannibalisation of PSTN lines by UniFi.

Maxis requested that the SKMM review its forecast to reflect the clear substitution of PSTN lines by UniFi lines, which is virtually 100%, and noted that this has clear implications on the other models, with a decreasing number of copper lines in service and a much stronger proportion of fixed calls delivered over IP in the access network. Maxis noted that, in the current implementation of the models, the forecast results over-estimated costs for HSBB and fixed termination services.

Telekom Malaysia noted that it had not provided any forecasts and that the SKMM had relied on Telekom Malaysia's monthly reports to Government. It suggested that demand

forecasts would need to be extremely accurate, to ensure that all capital and operational costs were accounted for.

Question 22

The SKMM seeks comments on the asset base used for setting HSBB costs and the adjustments made to account for the Government contribution.

Celcom considered that the approach adopted by the SKMM is appropriate. It noted that the adjustment for the Government contribution in the model must not permit any return on this component nor any mark up for operational expenses. Celcom also noted that the SKMM should ensure that the Government contribution is only used for new capital spending, as any use of this contribution for replacement of assets would result in double recovery if a separate depreciation had already been allowed for the original assets.

DiGi noted that the asset base used in the model is somewhat inflated due to the starting date of the model and questioned the reason for not backdating the cost. DiGi also agreed that the Government contribution of RM2.4bn should be used to support capital expenditures of the HSBB network, thereby ultimately reducing cost-based prices.

Maxis was concerned that the cost inputs used by the SKMM for the HSBB model are unlikely to guarantee appropriate reconciliation of costs. The model is also susceptible to double-counting. Maxis noted that the lack of data from Telekom Malaysia implied that the SKMM's consultant has not been in a position to ensure that the sum of the assets included in the three models (Fixed Core and Transmission, Fixed Access, HSBB) reconciled with Telekom Malaysia's audited accounts.

Maxis also noted that there is a strong possibility that all HSBB investment is lumped into the HSBB model, and that all legacy assets are accounted for in the Fixed Core and Transmission/Fixed Access model, with no reflection of the synergies that the new core network bring to the combined infrastructure. Maxis noted that a large amount of capital expenditure has gone into the core network (as per the PI Paper, 60% of HSBB investments to date), consistent with announcements by Telekom Malaysia and the Government that the HSBB program would support the modernisation of Telekom Malaysia's core network and the upgrade of international bandwidth links. Maxis noted that these upgrades support the entirety of Telekom Malaysia's operations, and not only HSBB services, and should be split appropriately between the Fixed Core and Transmission model and the HSBB model.

Maxis' view was that a thorough verification of the costs is needed, focusing in particular on ensuring there is no double counting of costs (e.g. in the core network).

Maxis was concerned that the treatment of the Government contribution by the SKMM reduces the required return on capital for investments (but not the depreciation) made in the early years of the rollout. Maxis noted that this meant that access seekers were expected to compensate Telekom Malaysia for all the costs incurred, including those financed through the Government contribution. Maxis' view was that the Government contribution should be excluded from the computation of depreciation charges throughout the model, either directly or through the calculation of a negative annual depreciation charge in the building-block model.

Telekom Malaysia questioned the completeness of the asset base in the HSBB model, in particular with regard to core network expansion. It also believed that the Government contribution had not been accurately taken into account, given the details of the agreement between Telekom Malaysia and the Government.

Question 23

The SKMM seeks comments on the appropriate depreciation schedule to be used in the HSBB cost model and its preliminary choice of straight-line depreciation.

Celcom agreed with the SKMM's reasoning and supported the approach adopted by the SKMM and the use of straight-line depreciation under these circumstances.

DiGi noted that Telekom Malaysia did not provide service demand and take-up forecasts for use in this Access Pricing Review, and hence DiGi was unable to comment specifically about the depreciation method. DiGi stated that the SKMM should adopt an equitable approach to enable competitive wholesale pricing to meet the National Policy Objectives and, in support of this, Telekom Malaysia should provide the necessary forecasts to enable a fair and transparent assessment to derive reasonable HSBB prices.

Maxis noted that the proposed straight-line depreciation is likely to result in excessive costs during the period in which demand ramps-up. Maxis further noted that, while the SKMM argued that tilted-annuity depreciation would be able to mitigate this issue by deferring cost recovery, this is overly simplistic as titled annuities only phase cost recovery based on the change in the price of the MEA, but do not cater for the evolution of demand/utilisation of assets. Maxis noted that this would require a full economic depreciation implementation.

Telekom Malaysia agreed that, if the SKMM were to continue with a building-block methodology for the HSBB cost model, then straight-line depreciation was appropriate. It reiterated that it did not support the use of the methodology.

Question 24

The SKMM seeks comments on its proposed approach to regulating prices on the HSBB network and on the appropriateness of the proposed prices for residential broadband Internet service.

Deol & Gill felt that the proposed regulated service at 10 Mb/s downstream was not fast enough and higher bit-rates would encourage greater take-up of HSBB services. Deol & Gill also sought clarification of what charges are included in the proposed regulated prices.

DiGi noted that, while the regulated service is a Layer 2 service, access seekers will still incur additional costs to provide a meaningful service to end customers, whether or not these are provided by Telekom Malaysia. DiGi stated that the proposed regulation of a Type 4 service without QoS should be taken as a test case for future regulation of services to allow a competitive environment. DiGi also noted that the HSBB is a bottleneck service provided by a monopoly provider and that prices should not be a barrier to entry for access seekers whose role in the sector would contribute to national objectives.

Maxis noted that the SKMM proposed to regulate only one specific service, namely standard residential internet access at 10 Mbit/s with a contention ratio of 10:1 and that this, in essence, is a managed service. Maxis noted that this means that Telekom Malaysia will provide end-to-end access to the end customer of the access seeker, throttling the peak bandwidth to 10 Mbit/s, and 'reserving' 1 Mbit/s of capacity in the aggregation network for the access provider.

Maxis noted that this is at odds with international practice: in any of the leading jurisdictions where a publicly funded fibre broadband network has been regulated to provide access to access seekers (e.g. Singapore, Australia), the approach taken has clearly focused on providing access seekers with the ability to provide the same offers as the incumbent (functional replicability) on competitive pricing terms (economic sustainability).

Maxis strongly disagreed with both the choice of service to regulate, as well as the rationale exposed by the SKMM. Maxis' view was that the most likely result of regulating

a specific product is that the access provider will make this product irrelevant, and that this is likely to happen in two related ways:

- the access provider could increase the baseline bandwidth of its retail offers to 20 Mbit/s, as this can be easily done by the access provider, without necessarily incurring additional costs. However it would result in access seekers being only able to offer a low-end offer that is unattractive to end-users; and
- even if the access provider agrees to scale its regulated offer to 20 Mbit/s, the contention ratio of 10:1 will result in a doubling of the aggregation costs for the access seeker, potentially for a very small increase in customer experience. As the access provider will be able to control aggregation as it sees fit, using statistical multiplexing methods, its costs would only increase slightly, resulting in access seekers being unable to compete.

Maxis noted that regulating an end-to-end, fully-specified retail product, is inconsistent with the objective of designing a layer 2 access product, and constrains access seekers' ability to define their own end user services. Maxis noted that it also does not address the need for additional services to be bundled (VoD, TV, voice) in order to replicate the UniFi service set. Maxis' view was that what is needed is an adequately defined service carefully regulated based on efficiently incurred costs, and supported by strict monitoring by the SKMM to avoid predatory pricing and margin squeeze by Telekom Malaysia, to ensure that the difference between wholesale prices and retail prices, including in bundles, is sufficient to enable access seekers to enter the market.

Maxis' view was that the regulated HSBB product must be based on two components, namely a customer link and a shared aggregation bandwidth based on Ethernet, as is the case in every jurisdiction where HSBB access has been implemented. Maxis noted that this is also in line with the commercial service Telekom Malaysia is offering, albeit with prices which make it uneconomic for access seekers wanting to compete with UniFi.

Maxis noted that currently Telekom Malaysia's commercial offering includes end users' links and access to Telekom Malaysia's backbone network. However, because of the difficulties in gaining co-location services at Telekom Malaysia's POI, access seekers need to lease Telekom Malaysia's backhaul service for connection between Telekom Malaysia's service gateway and its own, creating another layer of costs.

Maxis noted that the current proposed service and regulated price will create significant barriers to implementing this service, and that already Telekom Malaysia was claiming that it cannot provide it. Maxis noted that, separate to the need to ensure prices are

reasonable, the availability of a layer 2 product that is fit-for-purpose must be made a priority. Maxis stated that regulated prices should then be examined again, on the basis of a clear set of technical parameters, enabling accurate costing and providing clarity to access seekers.

Maxis also emphasised the need for regulation of HSBB products to apply to the entire HSBB footprint, not solely the first phase of deployment, and that, in particular, regulation should also expand to non-residential premises, where control of the access network is as much a bottleneck as on residential premises.

Packet One recommended that the SKMM extend the regulation of price beyond the proposed HSBB Layer 2 service at 10 Mb/s. Packet One's view was that price should be regulated at Layer 2 service and Layer 3 service at 5 Mb/s, 10 Mb/s and 20 Mb/s. Packet One noted that at present Telekom Malaysia is offering HSBB service only at Layer 3, which is a non-Access List item.

Packet One's view was that the HSBB Layer 2 service at 10 Mb/s is compelling enough to provide residential broadband Internet service. However, consumers today are demanding more than this to access to a wider range of services that can be offered through HSBB.

Packet One highlighted that Port rental and Line rental shall only be applicable when the service is active and that these rental charges should be removed during instances of early termination with a flat termination fee being adopted in its place.

Telekom Malaysia did not support the SKMM's proposed approach to regulating prices on the HSBB. It believed that economically efficient investment in fibre will not be promoted by regulatory intervention at the early stage of growth of HSBB services. Telekom Malaysia cited an ITU study and regulatory practice in Europe to support its belief that regulatory forbearance was international best practice.

Telekom Malaysia did not wish to comment on the appropriateness of the proposed prices as it did not support the costing methodology used.

TIME indicated that it did not support the regulation of prices for HSBB services. It noted that these services were still in the introductory stage and any regulatory intervention could risk distorting the market. It quoted an ITU study as recommending regulatory forbearance in such cases. TIME noted that it is rolling out fibre networks to promote infrastructure competition. It has already seen competition from other HSBB

providers and broadband wireless. It believed that there should be maximum flexibility to permit licensees to experiment with new and innovative retail services.

8.3 Model update

The SKMM reconsidered the take-up of voice service on the HSBB in the light of comments received and its own view of the market. A saturation level of 100% take-up would not be appropriate as it is not clear that all access seekers would necessarily offer a separate voice service (that is, a service not just embedded in a general Internet service). Nor is it likely that all customers would take up a fixed voice service, given ongoing fixed-mobile substitution. The SKMM has revised the saturation level of voice service to 80%.

8.4 SKMM's final views

8.4.1 Service and cost assumptions

The SKMM notes the various estimates provided in response to the Public Inquiry. It notes that the rollout of HSBB services is in line with the agreement between the Government and Telekom Malaysia and that the take-up is higher than the estimates provided by Maxis. The SKMM continues to believe that it has made reasonable assumptions about take-up of individual services.

With regard to the cost base, the SKMM notes the extensive database of costs provided in the monthly reports by Telekom Malaysia to the Government. This has permitted the SKMM to make an accurate assessment of actual costs. The SKMM has excluded some core costs and all international costs, as explained in the PI Paper. The cost base includes only those costs for providing layer 2 services.

Given the responses to the Public Inquiry, the SKMM has retained straight-line depreciation in the HSBB cost model.

8.4.2 HSBB regulated prices

The SKMM notes the suggestions by some respondents to set prices for higher bit rates for HSBB Network Service as well as to unregulated HSBB Layer 3 services. At this juncture, this Public Inquiry is dealing with the existing service description of the HSBB Network Service as defined in the Access List, and the review of the Access List itself is outside of the purview of this study.

The SKMM recognises that there is continuing uncertainty in HSBB take-up and market development, and this means that there would be a high level of uncertainty in any forward looking prices. The SKMM’s final view is that setting regulated HSBB service prices at this stage would not promote competition, and has decided not to set regulated HSBB service prices.

Table 18: HSBB Layer 2 Service at 10 Mb/s Downstream and 10:1 Contention Ratio Indicative Prices

	Units	2013	2014	2015
Installation & Setup	RM	118.61	149.44	183.12
Port Rental (per port)	RM/month	2.10	1.40	1.15
Line Rental	RM/month	29.23	21.63	18.72

Source: HSBB Model (HSBB Network Service without QoS Type 4)

9. MOBILE SERVICES

9.1 Overview

The SKMM developed a Mobile and WiMAX cost model based on the TSLRIC+ methodology for assessing the cost of providing mobile and WiMAX origination and termination services in Malaysia. A “standard operator” version of this model with 30% market share was used to set proposed symmetric prices for mobile origination and termination services.

Part D of the PI Paper concerned Mobile and WiMAX services. Chapter 14 was devoted to mobile services. It described the assumptions about all inputs to the model, including service demands and traffic, the mobile network model, spectrum allocations and radio network costs, and cost mark-ups. The assumptions and calculations leading to a WACC value to use in the model were described. After outlining the changes made after model viewing, the PI Paper presented calculated prices.

In determining suitable regulated prices for mobile origination and termination services, the SKMM had considered a number of issues: whether there should be asymmetric prices for different operators; the effect of different spectrum allocations; and the assumption of a 3G-only operator. These issues were described and SKMM’s proposed prices presented in the PI Paper.

The SKMM also sought comments on whether the appropriate cost methodology should be pure LRIC.

9.2 Summary of submissions received

Question 25

The SKMM seeks comments on the suitability and completeness of the demand and network design assumptions in the Mobile model.

Some respondents agreed with the suitability and completeness of the demand and network design assumptions in the mobile model. Others felt that inputs, such as traffic volumes or coverage, were either too high or too low. Maxis provided detailed comments on the WACC calculations. The fixed operators believed that the model should be based only on a single most efficient radio technology.

Celcom agreed with the SKMM's approach to base the "standard mobile operator" in the Malaysian market on an operator with 30% market share of traffic given that there are 3 major mobile operators and a number of aspirants. The important matter is that the market share used for modelling captures scale efficiencies, which the 30% market share achieves.

Celcom considered that the assumptions referred to are reasonable and appropriate.

DiGi noted the SKMM's comments about the minimal cost differences for operators with restricted 900 MHz spectrum allocation and acknowledgement that "Lower frequencies have better propagation characteristics, leading to lower costs for providing coverage". DiGi stated in its submission that, while DiGi is competing with a significant handicap against other spectrum holders in the 900 MHz bands, DiGi has emerged as the principal price maker in the market. DiGi also noted that its lack of 900 MHz spectrum, while manageable, hampers its ability to effectively provide coverage in rural areas. While not directly related to setting the level of MTR, this distorts a general view of a level playing field and hampers DiGi's ability to offer the same economic and consumer benefits in relation to data and broadband wireless services.

Maxis generally felt that the traffic per subscriber assumptions were reasonable, however, felt that the number of prepaid subscribers was overly aggressive, resulting in the overall voice traffic in the SKMM model being much higher than expected. Maxis supplied information comparing the SKMM model data with Maxis' submitted data and data sourced from Wireless Intelligence.

Maxis stated that the SKMM model assumes an increase in network coverage of Malaysia which understates actual coverage for the 2G and 3G networks and provided information comparing model data with Maxis' submitted data.

Maxis noted that the spectrum assignments in the model represent a 'best case' scenario in the Malaysian market today, which do not reflect the assignment of an average operator, but rather the maximum current assignments. Maxis noted that this has the potential to underestimate the number of sites required for an average operator, particularly for GSM.

Maxis noted that the SKMM model takes an overly simplistic view of spectrum use in Malaysia, neglecting the re-farming of 900 MHz spectrum for 3G services. Maxis noted that this is particularly the case in high traffic areas, and relieving congestion on data services shifts a certain amount of burden onto investment to support voice services and has a flow on effect on the use of 1800 MHz spectrum.

Maxis also noted that there was an apparent discrepancy of licence fees in the released model between two sections in the profile and between the total fees in the released model and Maxis' estimate of total fees.

Maxis noted a number of points for consideration regarding the mobile WACC:

- the choice of reference market and weights is not justified, and appears to put excessive weight on lower cost of equity regions, vs. Malaysia where most of Maxis' shareholders are located (either directly or through nominees);
- while the SKMM indicated that the risk free rate is set with reference to US Government bonds, Maxis would welcome more details on how this relates to historically low government bond yields since the start of the financial crisis, which have not filtered through to lower cost of equity for corporations such as Maxis;
- the lower cost of equity in ASEAN-5 markets vs. Malaysia is unexpected and appears to be a factor of equity beta as opposed to a true reflection of the returns required by investors in markets such as Indonesia, the Philippines and Thailand; and
- the country risk premium appears to be calculated with reference to the US risk free rate, however, the model assumes no risk premium for a Global index (World reference point) vis-à-vis the US, which appears overly aggressive.

Maxis' view was that overall the cost of equity of 7.75% calculated in the model appears significantly understated for a "standard mobile operator" as defined by SKMM (with 30% share of the mobile market). By correcting the risk free rate and reflecting a higher weight towards Malaysia, Maxis believed that a cost of equity in the region of 10% would be more reflective of the funding reality faced by standard operators.

Maxis provided an international benchmark of WACCs showing that Malaysia is in the middle of the range of much more developed markets, and of most significance was that of the markets in Asia-Pacific, the WACC considered in Malaysia is significantly lower than those in Australia and New Zealand.

Maxis noted that there is a wide variety of potential configurations for each network element, depending on each vendor, and even each new release of the equipment. As such, Maxis noted that:

- the capacity-adjusted price of equipment (e.g. the cost per unit of capacity) must be reasonable and appropriately benchmarked. This allows for discrepancies linked to different operators purchasing equipment with different levels of granularity, and it also entails that the model may be generating a number of units of equipment different from a single operators' but with an appropriate amount of capacity;
- the number of nodes in the network be comparable with the actual networks in Malaysia. Of particular importance is the number of BTSs/Node Bs and switching locations. Maxis' view was that the current model assumes ~30% less units of BTS/Node B/eNode B in the network, despite having 30% higher traffic and 18% more coverage than per Maxis' submission;
- the volume of current network equipment is identical for both the large and standard operator profiles in the model, however Maxis was unable to do a thorough review based on the released model; and
- the modelled investment in the various platforms must reconcile with the actual investment made by the operators in the past. Maxis noted that the model released by SKMM did not allow them to assess the reasonableness of the overall investment, which Maxis believed was essential.

Packet One's opinion was that demand measurement in the Mobile model was complete and suitable. Packet One's view was that the network design assumptions in the Mobile model were significant and complete to come up with the network design. Overall, Packet One was of the view that the assumptions would be able to provide a future outlook on the evolution in the mobile market.

Telekom Malaysia noted that the SKMM mentioned on page 132 of the PI Paper that the mobile termination rate is the "amount a mobile network operator can charge another mobile network operator or a fixed network operator to terminate a voice call on its mobile network", pointing out that the mobile termination rate should reflect the cost of terminating a call rather than the charge the market will bear.

Telekom Malaysia noted that the model should assume an efficient network, but is actually a model of an incumbent 2G and 3G networks. Telekom Malaysia noted that the number of carriers per sector is derived from operator data and that this therefore is not following efficient and MEA principles. Telekom Malaysia also stated that they expected the transmission to be IP-based rather than SDH-based.

Telekom Malaysia noted that the model includes a mix of 2G, 3G and LTE traffic, whereas in LRIC methodology under MEA principles means that an efficient operator would have solely a 3G network. Telekom Malaysia also noted that the increment in the SKMM model is the entire network rather than the difference between a coverage driven (minimum capacity) network and a capacity driven network, thus incorporating the coverage expansion of 3G and the rollout of LTE. Telekom Malaysia noted that the lower cost of the smaller operator profile is a result of just 3G technology and lower coverage requirements.

Telekom Malaysia was concerned that the voice prices are generally increasing over time, and that this was due to the network expansion costs being included in the price.

Telekom Malaysia noted that commentators anticipate that around two-thirds of Malaysian handset sales in 2012 will be for smartphones and that the Q1 2012 Malaysian take-up for smartphones was 27%. Telekom Malaysia also noted that mobile operators could drive a more aggressive upgrade timetable.

Telekom Malaysia's view was that by maintaining higher mobile termination rates, this would not motivate mobile operators to move to more efficient technologies and that if the mobile termination rate was lowered, then mobile operators would find it worthwhile to offer free or part-subsidised upgrades to 3G handsets.

Telekom Malaysia was concerned that the model uses forecasts of active subscribers solely from the mobile operators themselves, noting that in Q1 2011 Maxis adopted a more stringent definition of a subscriber, significantly impacting reported subscriber numbers.

Telekom Malaysia noted that the traffic forecasts used by the SKMM for the "standard mobile operator" appear low, particularly compared to the mobile operator financial reports. Telekom Malaysia provided a comparison of the standard mobile operator traffic volumes with those from the financial reports for DiGi and Maxis.

Telekom Malaysia noted the option for including or excluding USP payments in the model. Telekom Malaysia assumed that it would be inappropriate for fixed operators to subsidise mobile coverage where the modelled operator has already been subsidised with USP payments and that any double counting is avoided.

Telekom Malaysia recommended that the SKMM:

- adopts 3G as the appropriate efficient mobile network for the regulatory period;

- includes only traffic-related costs in calculating termination rates, disregarding coverage costs;
- reviews the mobile traffic assumptions which appear low in comparison with actual traffic; and
- ensures that there is no double compensation for USP payments to mobile operators.

TIME believed that the SKMM was being unnecessarily tolerant of a lack of urgency by mobile network operators to encourage the transition to 3G services and urged the SKMM to drive the mobile operators away from 2G to more efficient technologies. TIME believed that, because of the continuation of 2G technology, the calculated interconnection prices would be inflated.

U Mobile's view was that for reasons of transparency, sources of model input, methodology of forecast and network design assumptions used in the mobile model should be provided. U Mobile highlighted that, based on the proportion of 2G to 3G subscribers, there was a likely over-estimation of 2G traffic in the model.

U Mobile noted that in addition, there appeared to be an error in the model where there is decoupling of the traffic-driven base-stations from traffic. U Mobile also suggested that based on its experience, 80% was a more appropriate value for proportion of annual traffic in busy days. U Mobile further noted that it had twice as many radio access network sites as that assumed in the small operator profile.

U Mobile suggested, in relation to the WACC assumptions, to use a 10-year treasury note, rather than 8-year maturity treasury note. U Mobile requested a re-look at reconciliation and the unit investment assumptions for BTS, Node Bs and TRXs.

Question 26

The SKMM seeks comments on whether it should continue to set symmetric prices for facilities and services on the Access List.

The majority of respondents agreed with the SKMM's view to set symmetrical cost based prices.

Celcom's submission stated the strong view that the regulated price setting should be symmetric. Celcom argued that the SKMM's consideration of alternative arguments in favour of asymmetry was flawed:

- Regarding the need for efficiency to be assessed relative to scale, Celcom argued that these may reflect the resources and skills that each operator has and that it is inappropriate for a regulator to seek to "balance" the scale results through termination rate differentials or any other means. Operators must be encouraged to use their competitive advantages and innovation to achieve and retain market scale;
- Regarding the provision of late-entrants with advantages that trade-off short-term static efficiency losses against longer term efficiency, Celcom argued that this is a rationalisation and that a new entrant should consider the market dynamics and its ability to compete before entering. Seeking regulatory benefits at the expense of existing market participants and their customers could encourage inefficient market entry; and
- Regarding asymmetrical pricing allowing scope for investment and innovation, Celcom argued that the costs of investment and innovation should be funded from the growth and prospective benefits they cause rather than requiring asymmetry of regulated rates.

DiGi agreed with the SKMM's view to set cost based prices that are symmetrical, set on an "efficient provider basis".

Maxis welcomed the SKMM's approach, which reflected the fact that the vast majority of mobile voice calls in Malaysia are carried over nationwide 2G/3G networks, and not on the much smaller, 3G or WiMAX-only networks of smaller operators. Maxis agreed that within the subset of operators that have 2G and 3G networks, that setting a single, symmetric benchmark based on an average operator makes sense. This is consistent with the SKMM's findings that spectrum had little impact on unit costs.

Packet One's view was that the SKMM should continue to set a symmetrical price for facilities and services on the Access List and that the SKMM should uphold the fundamental basis of the CMA, which is technology neutrality. Packet One stated that price should not be set based on what technology service providers are using but it should be set according to the nature of the services offered.

Telekom Malaysia recommended that the SKMM should continue to set symmetric prices at a level that reflects an efficient operator's costs.

TIME wished to express no view on symmetric prices for mobile services but reiterated its support, expressed under Question 14, for asymmetric prices for fixed services.

U Mobile's view was that asymmetrical prices should be set to take into account exogenous differences such as late market entry and availability of spectrum. U Mobile provided examples where national regulators in Europe applied asymmetrical MTRs for mobile operators with spectrum only at 2 GHz and above. U Mobile viewed that its small market share was not attributable to inefficiency but rather to the exogenous factor of late market entry. U Mobile viewed that, in addition, the model produced unrealistic results for the small operator profile, based on a small coverage assumption.

Question 27

The SKMM seeks comments on its final proposed prices for Mobile origination and termination services.

The responses to this question were mixed, with some supporting the SKMM's process for calculating the regulated rates and some preferring changes to different aspects. A number of respondents provided information regarding international benchmarking of Malaysian fixed and mobile termination rates and the ratio between these.

Celcom considered that the process for calculating the regulated rates for these services has been properly undertaken. However, Celcom noted that the relationship of these rates to the rates for the fixed origination and termination services does not align with the cost-based ratios in other countries.

Celcom noted that the calculated costs per minute for mobile origination and termination are increasing and that this is due to the large and continuing investments in 3G expansion. Celcom agreed with the SKMM's approach to this.

Regarding the increasing fixed termination and origination rates, Celcom noted that this results from a declining traffic level and an apparent inability of the fixed operators to retire excess capacity during the period of the model forecasts. Celcom noted, however, that the fixed operators do have the ability to retire this excess capacity and it is only the modelling approach that does not reflect this, resulting in higher than appropriate fixed termination and origination rates.

DiGi urged the SKMM to adopt a cautious approach and maintain the MTR rate at 5 sen/minute for a period of at least 3 years from the effective date of the Ministerial Direction No 4 of 2010 and thereafter adopt a glide path from the current rate to MTR calculated using LRIC, as a means to avoid disruption in the market. DiGi also urged the SKMM to consider the countervailing factors that are contributing to cost increments, such as ongoing processes of network modernization to improve customer experience, rural coverage enhancement, quality improvement measures, International Mobile Station Equipment Identity (IMEI) blocking, SMS filters, mobile number portability and also other common costs on the retail aspect of the business to service the customers as competition intensifies.

Maxis agreed with the principles used to set a symmetric mobile termination rate, including the glide path to reduce the negative impact of the projected decrease. Maxis noted, however, that the end-point of the glide path must be carefully calculated and based on the right 'standard operator'.

Maxis' view was that the standard operator was too large, resulting in understated costs for a standard operator, for the following reasons:

- Maxis' view was that the overall market size modelled is too large, overstating the potential overall market significantly, both in terms of subscriber numbers and traffic; and
- the standard operator inputs assume a 30% market share, based on the premise that three large operators (Celcom, DiGi and Maxis) are competing with one smaller operator (U-Mobile) for the cellular voice market. Maxis noted that this disregards the WiMAX operators and future LTE operators as unable to capture any share of the market. Maxis' view was that this is overly aggressive, particularly as the challenger operators will capture some market share, especially in urban areas, and that in this regulatory period, U-Mobile benefits from a comprehensive and competitive national roaming agreement, as well as a supportive, well-funded industrial shareholder.

Maxis' view was that an aggregate market share close to 25% would provide a more adequate and future-proof estimate, recognising the current market structure in urban areas (six network operators, potentially increasing to nine) and the increasing competition between the four main mobile service providers.

Maxis additionally noted that the relative levels of costs calculated for fixed and mobile termination in the models prepared by the SKMM raise very significant questions as to

the accuracy of the modelling and in particular the approach to fixed termination, the costs of which are well above any other market where similar exercises have been undertaken.

Maxis noted that mobile termination rates in Malaysia have historically been much lower than in other markets and that even though Malaysia adopts a Long Run Average Incremental Cost with mark-up for common business costs or LRAIC+ approach, the regulated rate is around the same level as that in France, Italy and the UK, where a pure LRIC methodology is chosen. Maxis's view was that the proposed MTR in Malaysia is at the low end.

Maxis noted that in contrast, the fixed termination rates in Malaysia have been historically, and remain, significantly higher than in other markets. Maxis supplied benchmark country data which showed none of the benchmark countries having a higher fixed termination rate than Malaysia. Maxis also noted that fixed termination rates usually are significantly lower than mobile termination rates based on international benchmarks, which contrasts starkly with the situation in Malaysia, where rates for fixed termination were kept at the same level as that of mobile termination.

Packet One noted that mobile numbers are categorised as non-geographic, thus making any link to a particular location meaningless. Packet One noted that at present there is no need for multiple Points Of Interconnect for an efficient operation. Packet One further noted that as the technology further evolved costs to the network elements are reducing and therefore the rate for the regulated price should be lower and it should continue to decline over the years as the network becomes more efficient.

Packet One's view was that the new regulated price should be maintained at a single rate as per the methodology applied in the Ministerial Direction No. 4 of 2010.

Telekom Malaysia's view was that the SKMM's final proposed prices for mobile origination and termination are inappropriate and that they should be recalculated following Telekom Malaysia's recommendations.

TIME noted that the cost model produced rising prices in later years and believed this was both not appropriate and inconsistent with experience elsewhere. It therefore concluded that all mobile prices should be declining over the regulatory period. Any other result, it believed, would be evidence of "regulatory capture" by powerful operators. TIME suggested that some mobile operators were offering free retail on-net calls and were therefore cross-subsidising this service with other interconnection services; it could also be seen as anti-competitive behaviour.

U Mobile's view was that SMS termination should be regulated, as rates agreed in its access agreement were higher than the prices calculated in the mobile model.

YTL agreed with the final proposed prices for Mobile origination and termination services.

Question 28

The SKMM seeks comments on the appropriateness or otherwise of the pure LRIC approach to costing interconnection services in the Malaysian context.

Responses to this question were split with some supporting pure LRIC and some agreeing with the SKMM's preliminary view to not use pure LRIC in Malaysia.

Celcom agreed with the SKMM's conclusion that pure LRIC is not appropriate for Malaysia at this time. Celcom did not agree with the reasoning put forward by the SKMM and instead argued against pure LRIC on both principle and practical implementation:

- Celcom argued that from a principles perspective, the policy goal of additional coverage should be contributed towards by both on-net minutes and interconnection minutes.
- Celcom argued that from a practical implementation perspective, that a move to pure LRIC would be such a radical shift that glide paths might be required in excess of the 3 year period of the current review. If the SKMM was to commence a review of a pure LRIC approach, this should be initiated much earlier than the implementation timeframe.

DiGi agreed with the SKMM's conclusion that pure LRIC is not appropriate for Malaysia. DiGi stated that the pure LRIC approach will result in the under recovery of costs by operators. DiGi was of the view that pure LRIC is unsuitable in Malaysia as it is still a coverage-driven market as operators are still expanding 3G coverage nationwide, particularly in the east coast of Peninsular Malaysia and East Malaysia. DiGi stated that pure LRIC is more suitable for markets with mature coverage.

Maxis welcomed the SKMM's decision not to support the application of pure LRIC-based interconnection charges for mobile termination in Malaysia. Maxis noted that this is consistent with the current level of development of mobile infrastructure in Malaysia and recognises the uncertainties linked to the application of pure LRIC around the world.

Maxis noted several reasons why a pure LRIC approach may not be appropriate for the Malaysian context, despite its implementation in European markets:

- such an approach would transfer the burden of recovering fixed and common costs from termination services to retail services. Due to the flexibility of offers for mobile voice and mobile broadband, particularly for prepaid services, mobile is instrumental in providing affordable services, and an increase in retail prices may go against government objectives, aiming to enable lower entry-level prices;
- a pure LRIC approach is best suited to mature markets, where coverage is stable. As coverage is extended, the business case for a newly covered area is uncertain and inherently risky. In particular, the utilisation of newly deployed coverage is likely to be low initially, but rise over time.
- there remains a significant proportion of mobile users that are 'incoming-only'. The business case for network roll-out and BTS operation in economically less developed areas is often predicated on incoming revenues making up for relatively low direct spending by users in these areas, and aggressive regulation of mobile termination, e.g. through the application of pure LRIC, could jeopardise these business cases and limit future coverage expansion; and
- pure LRIC results have been shown to be fairly unpredictable and somewhat erratic. This is because the allowable costs under this method are limited to those of the 'marginal' network elements and depending on whether these marginal network elements are more or less highly utilised, the unit pure LRIC will be lower or higher, irrespective of the overall size of the network.

Maxis also noted that on this basis, fixed termination is better suited to a pure LRIC treatment, as there is no real expansion of the PSTN network.

Packet One noted that the advocacy for LRIC cost models is often based on the assumption that this is the level at which effective competition would drive prices and that the cost model assumes that the latest technology is deployed throughout a network and this network benefits from the economies of scale associated with serving customers in a particular area. Packet One noted, however, that in the real world, companies do not instantaneously replace all their facilities with every improvement in technology and a new technology which replaces existing technology may produce a significant decrease in asset prices. Packet One noted that the cost model fails to recognize this factor and will often lead to a significantly higher cost price.

Telekom Malaysia's view was that pure LRIC should be adopted for mobile termination. Telekom Malaysia noted that for mobile operators, they could recover common costs at the retail level due to the increasing connections and traffic, while fixed operators were not able to do so due to the already declining traffic, and in some cases declining customer bases.

U Mobile disagreed with the SKMM that pure LRIC is inappropriate in Malaysia based on continued growth in traffic. U Mobile also disagreed that there would be detrimental effects on on-net retail call charges or that there is a small percentage of common cost. U Mobile suggested instead that, based on criteria such as economic efficiency, enhancement of competition and impact on consumers, pure LRIC is appropriate in Malaysia. U Mobile argued that pure LRIC would allow mobile operators to pay a smaller proportion of their retail revenue to other operators, and recover more of their costs from retail rates, hence, increasing retail price competition. U Mobile's view was that the Malaysian telecommunications market was not fundamentally different from Europe, based on a comparison between Malaysia and selected pure LRIC countries in Europe of levels of penetration, EBITDA margins over revenue, capital expenditure as a percentage of EBITDA, and data as a percentage of revenue.

9.3 Model updates

Subsequent to the receipt of Public Inquiry submissions, and taking into account feedback, the SKMM made the following changes to the mobile model:

- a minor correction to the mark-up calculation; and
- incorporated the updated transmission costing figures, reflecting the updated results from the Fixed Core and Transmission model.

9.4 SKMM's final views

The SKMM has carefully considered all the comments and issues raised by respondents.

9.4.1 Suitability and completeness of the model

Several respondents submitted information comparing fixed and mobile termination rates between Malaysia and benchmark countries. While the SKMM notes this information, it would like to emphasise that both the fixed and mobile termination rates in Malaysia have been costed on an equivalent principles basis, using subscriber numbers, traffic volumes and other Malaysian specific input data to drive the cost

models. The industry supplied data was checked, and where appropriate, modified according to the same principles and similar processes for both the fixed and mobile case. Model calibration and reconciliation was undertaken in both the fixed and mobile case.

The results for fixed termination rates are not out of line with international benchmarks, and the SKMM notes that the mobile termination rates are relatively lower in Malaysia than a number of benchmark countries. The SKMM notes that there has been a substantial amount of fixed to mobile substitution in Malaysia, and the fixed and mobile networks have been costed based on the relevant traffic volumes in Malaysia for each service type.

Telekom Malaysia was concerned that the phrase in the PI Paper “amount a mobile network operator can charge another mobile network operator or a fixed network operator to terminate a voice call on its mobile network” could be interpreted to mean the amount the market will bear. The SKMM would like to clarify that the Public Inquiry is to determine cost-based prices for mobile origination and termination services.

Maxis and Telekom Malaysia had divergent views on whether the traffic volumes used in the mobile model were under or overestimating the real traffic volumes. The SKMM notes that it checked the data received from all industry parties and performed a separate cross-check of interconnect traffic volumes using data from both mobile and fixed operators. The SKMM’s view is that the traffic volumes used in the mobile model are an appropriate reflection of the mobile industry traffic.

The SKMM notes DiGi’s comments about spectrum differences and emphasises that this has minimal impact on termination and origination rates, which include the cost of providing rural coverage.

The SKMM notes that there were several comments about details of input parameters, in some cases noting that the model used different values than those supplied by the respondent. The SKMM notes that it considered input values and design assumptions from all of the industry submissions, both from the initial data collection and from the model viewing feedback. The different profiles used in the mobile model are not meant to represent specific mobile operators, but a representative amalgam of an efficient operator of each of the profile categories.

The SKMM notes U Mobile’s comment regarding the supposed decoupling of the traffic driven base-stations from traffic. The cost model does determine the required number of base-stations using both coverage and traffic demand requirements, in contrast to U

Mobile's contention. U Mobile noted that the model assumes equipment remains in place for the duration of the regulatory period. This specifically affects the calculation of new 2G equipment. The SKMM has reconsidered this effect, notes that it is small, and has left the model unchanged.

The SKMM notes that it also conducted both calibration and reconciliation of the model results, as it did for the fixed model. The industry was given a fully working model, and was able to conduct their own calibration and reconciliation check using their own company specific input and results data. This confidential company specific data could not be supplied with the model.

In addition, the SKMM considered modelling inputs and design parameters from relevant models applied by regulators in other countries. The SKMM's view is that the final inputs and design parameters are appropriate for calculating regulated rates in Malaysia under the principles of the CMA.

The SKMM notes that it has used the same transmission costing in both the fixed and mobile models.

On Maxis's reference to a discrepancy in license fees in the models, the SKMM notes that one of the references Maxis commented on was for annual licence and spectrum fees that was used in the indirect cost mark-up, while the other reference was a comparative value that was used during the reconciliation process when running the model against each operators' specific inputs, but was not used directly with the standard operator profile.

The SKMM emphasises that USP costs in the Mobile cost model were excluded in the calculation of the proposed regulated prices, and remain excluded in the calculation of the final regulated prices.

Regarding the comments in relation to the mobile WACC, the SKMM notes its response to similar comments about the fixed WACC in Section 4.4.2. In particular, the SKMM emphasises that the use of the US Government bonds in reference to the risk free rate is in relation to the WACC component for non-ASEAN investors. The SKMM notes that the 8-year maturity treasury note was selected to align with the average mobile capital asset lives. The SKMM's view is that the approach, input values used and calculation of the mobile WACC are appropriate and correct.

The SKMM notes that some respondents were of the opinion that the SKMM should be modelling the mobile network on the basis of a pure 3G network, or offered different

views about the transition timetable from 2G to 3G. The SKMM emphasises that it has applied the same principles for the costing and modelling methodology for both fixed and mobile networks. This takes into consideration the network technology choices of an operator meeting customer demands. For the fixed network, this is mix of PSTN and VoIP services, while for the mobile network it is a mix of 2G, 3G and LTE services. The SKMM considered the comments regarding the transition timing from 2G to 3G, and remains of the view that the transition used in the mobile model is appropriate for the mobile market in Malaysia.

9.4.2 Symmetric prices

The SKMM notes the feedback received regarding symmetric versus asymmetric pricing, which was mainly supportive of the SKMM's view to symmetric pricing. The SKMM's final view is to maintain symmetric pricing for regulated mobile services.

The SKMM considered the responses discussing the appropriate market share for a standard operator in the Malaysian market. The SKMM remains of the view that basing the standard operator on a 30% market share remains appropriate. This still provides for the new entrants to gain 10% market share from the major 3 mobile operators during the period under review.

The SKMM considered the view of U Mobile that SMS termination should be regulated. The SKMM remains of the view that there is no requirement to regulate SMS, as the volumes between mobile operators is largely symmetric, and there is a growing trend for retail-level choice and competition in messaging services through the growth of over-the-top applications. Instead, U Mobile should rely on the indicative SMS termination rates published by the SKMM to negotiate commercially.

9.4.3 Use of pure LRIC

The SKMM reviewed the responses regarding the appropriateness or otherwise of pure LRIC in the Malaysian context. The SKMM considers that the Malaysian market is still developing in terms of mobile coverage levels, that interconnection traffic is a significant proportion of total traffic, and increased coverage provides benefits to the originating subscribers terminating on mobile subscribers. In addition, increasing coverage is an important component in the provision of telecommunications services to rural and underserved communities.

The SKMM's final view remains that a pure LRIC approach is not an appropriate choice for mobile termination costing in Malaysia for the current regulatory review period.

9.4.4 Final proposed and indicative prices

The SKMM's final view is that regulated prices for mobile origination and termination will be set using the standard mobile inputs for a mobile operator with 30% market share. Regulated rates will apply for voice services only, with messaging and video services not requiring regulation at this point. USP costs remain excluded from the calculation.

It is necessary, however, to avoid a sharp discontinuity in the regulated rates from the current 5 sen/minute. The SKMM has therefore used a glide path from the current rate to the calculated LRIC rates in 2015.

The final regulated prices for voice service are shown in the following tables.

Table 19: Mobile Network Origination Service Final Prices

	Units	2013	2014	2015
Voice				
Local	sen/min	4.63	4.26	3.89
National	sen/min	4.64	4.28	3.92
National with Submarine Cable	sen/min	15.66	15.70	15.76

Source: Mobile Model

Table 20: Mobile Network Termination Service Final Prices

	Units	2013	2014	2015
Voice				
Local	sen/min	4.55	4.10	3.65
National	sen/min	4.63	4.25	3.88
National with Submarine Cable	sen/min	15.63	15.66	15.73

Source: Mobile Model

In addition, the cost model provides indicative prices for other mobile services, as shown in the following tables.

Table 21: Mobile Network Origination Service Indicative Prices

	Units	2013	2014	2015
SMS	sen/message	0.08	0.08	0.08
MMS	sen/message	6.09	5.63	5.34
Video				
National	sen/min	71.96	62.56	56.97
National with Submarine Cable	sen/min	83.88	74.44	68.81

Source: Mobile Model

Table 22: Mobile Network Termination Service Indicative Prices

	Units	2013	2014	2015
SMS	sen/message	0.04	0.04	0.04
MMS	sen/message	7.25	6.81	6.51
Video				
National	sen/min	71.96	62.56	56.97
National with Submarine Cable	sen/min	83.88	74.44	68.81

Source: Mobile Model

10. WIMAX SERVICES

10.1 Overview

Chapter 15 of the PI Paper described the regulated WiMAX services and the features of WiMAX operators that differ from those of a mobile operator. The assumptions and calculations leading to a WACC value for a WiMAX operator were described. After describing the changes made to the cost model after model viewing, the PI Paper provided calculated prices for WiMAX regulated services. The SKMM proposed to regulate WiMAX services at the same maximum prices as for Mobile services.

10.2 Summary of submissions received

Question 29

The SKMM seeks comments on its proposed approach to regulating prices for WiMAX services.

Respondents were of mixed views regarding the SKMM's proposed approach to WiMAX services, differing as to whether or not they should be set at the same rate as mobile services, or even at fixed rates.

Celcom disagreed with the SKMM's proposed approach to WiMAX services. Celcom's view was that the regulated rates for WiMAX services should be separately costed based on the WiMAX specific cost model rather than allowing them the windfall advantage and over-recovery through being afforded mobile rates. Celcom stated that the rationale that WiMAX operators are niche and that there is convenience in applying mobile rates to them is not compelling. Celcom noted that costs are not technology neutral and that the SKMM should be cautious about broadbanding costs where functionality is significantly different.

Celcom noted the much higher cost of debt for WiMAX operators compared to fixed and mobile operators and that individual company credit ratings should not be used in this manner.

Deol & Gill did not support the proposition that WiMAX voice origination and termination services should have the same regulated prices as for the equivalent mobile voice services. In Deol & Gill's view, the proposal would distort the market and provide rewards and support for inefficient operators.

DiGi agreed with the SKMM's decision not to regulate WiMAX voice origination and termination prices at a lower level reflecting that their costs were due to the lack of traffic volume currently. DiGi also noted that, in line with the rationale for the adoption of symmetric pricing principles, WiMAX players should logically not be subsidized.

Maxis' view was that WiMAX operators should only be allowed to charge mobile termination rates at the calculated 'standard operator' level to the extent that they offer a similar service, in terms of functionality, coverage, and QoS. Maxis suggested that currently this does not appear to be the case.

Packet One emphasised the importance of upholding technology neutrality that is the core principle of the CMA. Packet One highlighted that Packet One and YTL are currently providing different types of voice services and that, while YTL was offering mobile services to its customers, Packet One offers a fixed voice service in compliance with the PSTN QoS mandatory standard set by the SKMM. Packet One noted that the CMA was put in place to allow licensees to undertake activities that are market specific and it is intended to look beyond the technology used to deliver services to consumers. Packet One's opinion was that the proposed approach of regulating prices for WiMAX services presented in the PI Paper contradicts the fundamental principle of the CMA.

Telekom Malaysia's view was that it was appropriate to set regulated prices for WiMAX voice origination and termination services at the same level as for mobile operators.

YTL agreed with the view of the SKMM to set WiMAX voice origination and termination services at the same rate as for the other mobile operators. YTL noted that it will provide an incentive for WiMAX operators to invest and roll-out the network, and is consistent with its view on asymmetric pricing in favour of small and new service providers.

10.3 SKMM's final views

The SKMM notes the different views provided by stakeholders regarding WiMAX rate setting. The SKMM notes the concerns some respondents expressed that there is both a cost difference, and a difference in functionality, coverage and quality of service between WiMAX and mobile services. Consistent with its view regarding symmetric pricing between large and small operators, the SKMM's final view is that WiMAX voice services will be priced at the same rate as mobile services. These rates were given above in Table 19 and Table 20.

11. INFRASTRUCTURE SHARING

11.1 Overview

The SKMM developed a Co-location and Infrastructure Sharing model using the building-block methodology to calculate costs and prices for co-location and infrastructure sharing services on the Access List. As part of the model development, the SKMM determined an appropriate WACC value for a tower company like an SBC. A form of the cost model with all commercially confidential data removed was made available on request to interested licensees during the Public Inquiry period.

Part E of the PI Paper concerned Co-location and Infrastructure Sharing services. Chapter 16 described the Co-location and Infrastructure Sharing model, including changes made after model viewing, and sought comment on its completeness.

Chapter 17 then dealt with Infrastructure Sharing. It described the services and configurations on the Access List and the assumptions and calculations leading to a WACC for tower companies, used for calculating infrastructure sharing prices. The PI Paper described the various options for infrastructure sharing provided by tower companies (SBCs), mobile operators and fixed operators, and presented calculated prices in each case. The SKMM proposed to set maximum prices for Infrastructure Sharing based on the costs incurred by SBCs.

11.2 Summary of submissions received

Question 30

The SKMM seeks comments on the completeness of the models for co-location and infrastructure sharing.

A majority of the responses discussed the issue of averaging in the co-location and infrastructure sharing cost models versus the variation in costs between individual facilities.

Celcom stated that the co-location and infrastructure sharing models were inherently incomplete and unfit for the purposes claimed. Celcom noted that the model did not examine a range of examples nor did it derive an average, and that the model cannot be used in its current form to materially assist any arbitration that the SKMM might need to undertake.

DiGi stated that the model appeared to be reasonably complete and they agreed with the SKMM's view that USP assets should not be included as the costs of these towers are financed by the USP fund. DiGi also observed that:

- In the clarification session the SKMM explained that the prices quoted for antenna space related to a set configuration of 3 services antennas and 2 microwave dishes. The PI Paper did not elaborate on the charge for extra equipment, be it antennas or microwave dishes. DiGi assumed that additional dishes are charged on a per antenna space;
- Another point raised was with regards to the installation of outdoor unit/equipment where access to equipment room is not necessary. It was explained that co-location charges do not apply; and
- The proposed prices were based on 3 antennas per site to recover costs. In reality there are more antennas per site on a 3-way (i.e. 3 operators, each with multiple antennas) sharing basis, and thus the prices could be lower.

Fiberail reiterated its contention that co-location that is not related to access to other services on the Access List should not be subject to price regulation. It provided an example, that it does not build towers for its own purposes, but rather it is for the use of the access seeker to complement its transmission services. Fiberail also believed that the building-block approach did not adequately take into account potential changes in land rental charges.

Fibrecomm suggested that the models were not complete as they did not reflect each operator's cost structure. Furthermore, the cost did not include a common cost mark-up. Fibrecomm therefore preferred to maintain commercial negotiation as the practice for co-location and infrastructure sharing.

Maxis's view was that the classification into geotypes should be on the basis of the site location rather than the tower company principal location. Maxis stated that it prefers the current pricing category arrangement, with only one rate for Peninsular Malaysia and four different rates for Sabah and Sarawak (by zone).

Maxis noted that although the SKMM acknowledged that tower costs are dependent on height, the current regulated price is not modelled by tower height, but only by geotype. Maxis noted that setting the regulated price at the average cost level involves risk of significant variations in net return on individual facilities. Maxis noted that, as the current regulated price is not entirely consistent with cost causation, the proposed prices

could lead to confusion in interpretation by different stakeholders, which may involve potential disputes. Maxis suggests that the SKMM may wish to consider regulating prices based on tower height in order to minimise incentives for tower companies to limit construction to lower-height towers, which have a lower cost, to maximise their returns.

Maxis noted that for state-backed tower companies (SBCs), the model assumed that there would be an average of 3.4 access seekers per site, however, based on Maxis' understanding of the profile of SBC's towers, only 55% of towers have three access seekers and 90% of the towers have no more than three access seekers. Maxis also noted that global benchmarks suggest that independent tower companies normally operated with a tenancy ratio of around two, depending on the market environment. Maxis stated that on this basis, the tenancy ratio used in the current model appears overly aggressive.

Maxis noted that the model assumed a standard allocation space for three service (Radio Frequency or RF) antennas and two backhaul microwave antennas. However, based on Maxis's experience, a standard co-location service consists of six service antennas and two backhaul microwave antennas. Maxis noted that since the model assumes a lower number of service antennas as the standard allocation, a higher tenancy ratio may be expected on the basis of three antennas per tenant.

Maxis noted that the model also includes a site utilisation factor because the SBCs were arguing that there is unused space in the sites after the previous round of model viewing. Maxis' view was that the site utilisation factor was already taken into consideration in the tenancy ratio, and thus applying a site utilisation factor creates double counting of unused space in the model, artificially inflating regulated prices.

Packet One's view was that the model had taken into account all the relevant factors for co-location and infrastructure sharing.

Sacofa indicated that the infrastructure sharing model should use a value of 2.7 for the average number of users per tower and provided data on tower usage from SBCs in support of this value. Sacofa also suggested that the average number of users per tower would fall in the future.

Sacofa argued that its WACC had been underestimated and proposed different values for the parameters of the CAPM. In particular, it suggested that the gearing had been over-estimated – Sacofa's borrowings had mostly been in support of its transmission business – and its price instability (equity beta) had been underestimated. It calculated a pre-tax WACC of 22.6%.

PPIT questioned the cost and parameter values used for the pricing of infrastructure sharing. It suggested that the operational costs per tower had been underestimated and noted that, under current commercial arrangements, increases in land rental charges were passed on to tower users. It further suggested that the initial asset values had been understated as there was incomplete book value data available from the SBCs. In addition, it suggested that the infrastructure volumes were overstated in the SBC's original data responses because of a misunderstanding of the purpose of the data. It questioned the use of a tenancy rate of 3.4 operators per tower and provided additional data on tenancy and occupation rates. It noted also that the economic asset life used in the model (20 years) was longer than the accounting lifetimes used by the SBCs.

Telekom Malaysia claimed that the models would deliver inaccurate results as they are based on an inadequate methodology. In addition, Telekom Malaysia noted that costs from SBCs may be appropriate for infrastructure sharing but not for co-location.

Question 31

The SKMM seeks comments on its proposed approach to infrastructure sharing services and whether these services should be subject to regulated prices.

Respondents reiterated the issue of site specific cost averaging in the infrastructure sharing cost model, and pointed out that in some cases, commercial negotiations lead to efficient outcomes.

Celcom considered that the costing treatment of tower assets and tower sharing should be treated equivalently regardless of whether the assets were owned by mobile operators or tower companies.

Celcom stated that it was not satisfied with the model and the overall approach adopted for infrastructure sharing services. Celcom noted that the costs and circumstances vary greatly and doubted the value of an average result, particularly given the lack of transparency on the services that were included and the range of samples that were averaged prior to the data appearing in the model.

Celcom considered that given the successful commercial negotiations, there was little to be gained from price regulation; nevertheless they noted that as these services are on the Access List and that in certain circumstances mandated access was appropriate. Celcom suggested the SKMM develops a set of guidelines for use in negotiation and arbitration instead of using the model developed during this pricing review.

Deol & Gill supported the regulation of access pricing for infrastructure sharing by all operators, as infrastructure sharing gives access to essential facilities for the provision of services. Deol & Gill did not support a regulated price for power, as the price was dependent on a third party. Deol & Gill also sought clarification of what charges are included in the proposed regulated prices for infrastructure sharing and of the definitions of urban, rural and remote areas.

DiGi stated that infrastructure sharing should be subject to regulated prices and that this was especially relevant in the current setting where the state governments are mandating the use of SBC towers for the provision of communications services in certain states. DiGi stated that the approach taken by the SKMM in considering the average height of towers, terrain and access issues are reasonable. DiGi also provided information comparing prices for infrastructure sharing in Malaysia versus selected Asian and Western European countries.

DiGi requested for the SKMM to set the basis and ceiling prices for access to in-building common antenna systems to enhance indoor coverage and customer experience. DiGi noted that building owners have taken advantage of the situation to charge excessive rentals that is continually hampering the speedy roll out of services in key locations.

Fiberail provided a quote from Booz & Company Inc. supporting regulatory intervention in infrastructure sharing. Fiberail noted, however, that the prices were very much dependent on area and location and hence should not be subject to price controls. Fiberail also suggested that pricing of power supply had not adequately taken the supply facilities into account.

Jaring was of the view that the SBCs should be encouraged to provide tower facilities for all telecommunications providers in order to avoid difficulties in gaining access to tower facilities owned by telecommunications operators. Jaring supported the regulation of tower access prices charged by SBCs.

Maxis noted that the primary business model of infrastructure sharing is for towers provided by SBCs. In particular, in certain states, the state government only grants permits to deploy new towers to the SBCs. Maxis noted that in practice, there is therefore no alternative for operators but to lease tower and site space from SBCs, who hold a monopoly on the provision of greenfields infrastructure in these areas. In this context, Maxis welcomed the SKMM's efforts to ascertain the costs of providing these services, in case of a dispute in the future.

Although Maxis agreed with the SKMM that price regulation may be necessary in the event of a dispute, Maxis noted that it is important to balance this with the risk of discouraging future investment. Maxis noted that in areas where various options exist (e.g. sharing with another operator, buying from a SBC, deploying alternative radio equipment such as distributed antenna systems), commercial negotiations are likely to lead to an efficient outcome and price regulation in these areas may therefore not be necessary. Maxis noted that in contrast, in areas where there is little supply of towers or low competition to the SBCs, price regulation is critical to avoid excessive pricing that is not justified by costs. Maxis therefore suggested that the SKMM implement price regulation only in areas with low competition or in case of a serious dispute.

Maxis also noted that building management companies in high impact areas such as airports and train stations should be compelled to provide access and floor-space on regulated terms, to avoid them extracting excessive prices and potentially preventing end-users from accessing high-quality mobile coverage (including mobile data).

Packet One concurred that the prices should be based on the average cost and that these services should be subject to direct regulated prices.

Sacofa suggested that there was no need to regulate infrastructure sharing prices as the industry was self-regulating, the access providers were delivering facilities at optimal cost and there was competition to deliver infrastructure sharing services. Sacofa cited evidence of growth in infrastructure facilities and participation by access seekers as evidence of a competitive market. Sacofa also suggested that the imposition of regulated prices for infrastructure sharing services would cause it to breach agreements already in place.

TIME noted that access to Main Distribution Frame or MDF rooms was critical to its business but suggested that in some areas building managers charged exorbitant access fees and imposed unreasonable terms and conditions. TIME urged the SKMM to set a common framework for prices to be shared between operators and building managers to drive improvements in telecommunications service.

PPIT submitted that infrastructure sharing prices should not be regulated as the service did not exhibit the criteria listed in section 4.1 of the PI Paper. PPIT provided evidence of a lack of high barriers to entry and noted the competition between SBCs and telecommunications providers in providing towers. It specifically denied that the SBCs held any monopoly on the provision of towers.

PPIT believed that, if infrastructure sharing prices were regulated as proposed, it would not be consistent with practice in other jurisdictions, and it would not cover the wide variation in actual costs incurred for a particular facility. PPIT provided descriptions of the wide variety of installations provided by SBCs. In addition, the average prices were not reflective of the costs incurred by any specific SBC, as each operated only in its home State. PPIT also noted that technology change may reduce the SBC's incomes from towers.

PPIT sought clarification of whether the proposed prices were minimum, average or maximum.

PPIT questioned the parameters used for calculation of the WACC for SBCs, arguing that the market risk premiums were not satisfactorily assessed and that, in any case, investors in SBCs were domestic and not fully diversified in their portfolios. PPIT also noted that other model inputs were questionable. In addition, it suggested that the effect on retail prices of regulating infrastructure sharing prices would be small, given that infrastructure sharing represented only a small proportion of mobile operators' cost base, while the effect on SBCs would be large, due to a reduced inability to respond to changing market conditions. On the whole, PPIT felt that regulating infrastructure sharing prices would lead to an over-emphasis on cost-driven buy and build decisions; this could lead to a reduced priority for network rollout in non-urban areas.

PPIT further noted that the calculated costs for fixed and mobile operators to provide infrastructure sharing services were significantly lower than for SBCs. Setting one set of prices based on SBCs' costs would result in an inequitable outcome that would favour fixed and mobile operators.

Telekom Malaysia maintained that infrastructure sharing should not be subject to direct regulated prices. It believed that price regulation for this service was not common, even in the Middle East. It noted that the use of average prices would not adequately cover individual cost components such as the exceptional costs of access to very remote locations, site surveys, or security and escort arrangements. For site surveys, Telekom Malaysia suggested a separate one-time charge to be commercially negotiated. In addition, Telekom Malaysia suggested that the proposed power prices did not cover the actual power-supply arrangements and the increasing cost of diesel. In summary, Telekom Malaysia believed that the proposed prices did not accurately reflect the actual cost of providing infrastructure sharing.

11.3 Model updates

Subsequent to the receipt of Public Inquiry submissions, and taking into account feedback, the SKMM has made the following changes to the infrastructure sharing model:

- updated the tenancy rate for SBC towers to better reflect actual tenancy rates;
- updated the tower utilization to better reflect the actual utilization level; and
- updated the common cost mark-ups from the Fixed and Mobile models.

11.4 SKMM's final views

The SKMM notes the feedback and information provided on tenancy rates and utilization levels, and has updated the infrastructure sharing cost model to better reflect actual values.

The SKMM notes the comment about the different treatment of infrastructure sharing by mobile operators and tower companies. The SKMM's view remains that the principal business of a tower company is to provide infrastructure sharing services, and hence the tower company needs to recover its common business costs through these services. For a mobile operator, however, the common business costs are recovered through its wholesale and retail services using the (potentially) shared infrastructure, and it is appropriate to provide space for infrastructure sharing on a marginal cost basis.

The SKMM notes the comments received about regulating prices for in-building access, and reiterates its view that in cases where building management companies or building owners are not licensees under the CMA, access regulation and access pricing is not appropriate. In such cases, other legislations or processes would be more appropriate.

The SKMM also takes note of Maxis's comments about setting price regulation in areas with low competition. However, this would entail carrying out a detailed study about the state of competition in provisioning of tower by location, which is outside the scope of this Public Inquiry.

The SKMM notes the comments regarding the variation in costs between sites for both infrastructure sharing and co-location services. The SKMM also notes that in a lot of circumstances, commercial negotiations can be successfully finalised. The SKMM's final view is therefore not to set regulated rates for infrastructure sharing.

While not definitive in providing a single rate that can be broadly applied, the infrastructure sharing cost model does provide quantitative insight into costs, and can provide guidance to the industry and the SKMM of site specific costs in a particular case for negotiation or arbitration purposes. The updated cost model provides the following indicative prices for Infrastructure Sharing Service provided by an SBC.

Table 23: SBC: Infrastructure Sharing Indicative Prices

Antenna Space

	Units	2013	2014	2015
Antenna Space: Urban Area	RM/year	2,065.48	1,990.32	1,915.15
Antenna Space: Rural Area	RM/year	4,130.97	3,980.64	3,830.31
Antenna Space: Remote Area	RM/year	4,573.57	4,407.13	4,240.70

Equipment Room

	Units	2013	2014	2015
Access to common systems: Urban Area	RM/year	24,918.75	25,691.23	26,487.66
Access to common systems: Rural Area	RM/year	24,918.75	25,691.23	26,487.66
Access to common systems: Remote Area	RM/year	24,918.75	25,691.23	26,487.66
Common Power	RM/kWH	0.43	0.44	0.46

Source: Infrastructure Sharing Model

12. CO-LOCATION SERVICES

12.1 Overview

Chapter 18 of the PI Paper dealt with Co-location services. It described the co-location options on the Access List and indicated the focus on physical co-location. After presenting the calculated prices for co-location provided by fixed and mobile operators, the PI Paper described the SKMM's proposal to set regulated prices based on mobile operator costs.

The proposed regulated prices were the same for all geographic areas. The SKMM also canvassed the possibility of setting different prices for urban, rural and remote areas and sought comment on this matter.

12.2 Summary of submissions received

Question 32

The SKMM seeks comments on its proposed approach to regulating prices for Co-location Service and on the appropriateness of the proposed prices.

There were mixed responses regarding the proposed approach and prices. Some respondents pointed out that site specific costs can vary, while other respondents emphasised that co-location is a necessary service to access other regulated services.

Celcom had the same view to co-location modelling and price setting as to infrastructure sharing. That is, Celcom stated that it was not satisfied with the model and the overall approach adopted for co-location services. Celcom suggested the SKMM develops a set of guidelines for use in negotiation and arbitration instead of using the model developed during this pricing review.

Deol & Gill sought clarification of urban, rural and remote areas, especially with regard to Sabah and Sarawak. Deol & Gill also sought clarification of the charges included in the proposed regulated prices and did not support the regulation of power prices.

DiGi supported the rationale to encourage physical co-location for operators to share space where appropriate. DiGi stated that a maximum regulated price based on the calculated costs modelled should be set with the expectation that access seekers and providers will negotiate the final price. DiGi stated that power costs should be on a direct

pass through basis from Tenaga Nasional Bhd and that a standard power tariff based on its 'Industrial' rate should be applied.

Fiberail suggested that Co-location services should be seen as a value-added service to be used in conjunction with other services and facilities on the Access List – that is, as a means to gain access to an access provider's services and facilities. Fiberail therefore suggested that Co-location could be subject to price regulation only when it is used in conjunction with other facilities and services on the Access List. Fiberail objected to price regulation for co-location as proposed by the SKMM: in Fiberail's view, the prices did not adequately take into account land rental increases or power supply facilities.

Fibrecomm referred to its answer to Question 30, questioning the completeness of the models and reiterating the preference for commercial negotiation.

Maxis supported strict price regulation for network co-location services as this is necessary to access other regulated products. Maxis welcomed the decision that the regulated prices specifically mention the space cost including services, which means there should be no additional costs allowed, such as cable routing, cable rack, access route, which have been used in the past to discourage access seeking.

Packet One's view was that the regulated price should differentiate the prices for urban, rural and remote areas as practiced by the industry currently.

In addition to its comments under Question 31, Telekom Malaysia suggested that there were network buildings that should attract special security measures and that these measures had not been considered in the costing. In addition, Telekom Malaysia provided confidential data on floor space rentals in urban areas, showing substantially higher rates than those proposed for co-location space.

Telekom Malaysia remarked that the usual unit of space measurement was square feet, not square meters.

Question 33

The SKMM seeks comments on whether there should be separate prices for Co-location Service in Urban, Rural and Remote areas and, if so, the basis on which the prices should be set.

Respondents generally agreed that there are differences in costs based on location, though some viewed that only three categories was not sufficient, and other respondents stated that there are factors impacting costs.

Celcom noted that these three categories do not exhaust the various diverse circumstances that affect co-location charges in any given location. Celcom suggested the SKMM develops a set of guidelines for use for negotiation and arbitration instead of using the model developed during this pricing review.

DiGi stated that since the data provided did not differentiate the cost of co-location services between areas, they assumed that there is no difference. DiGi noted that if the SKMM intends to recommend different prices for Sabah and Sarawak, the basis for deriving these should be logical and clearly explained.

Fiberail suggested that, if prices were to be regulated, they should be different for urban, suburban, rural and remote areas, based on the different costs actually incurred in each area. However, Fiberail did not support price controls for Co-location services.

Fibrecomm supported the need for separate prices for co-location in urban, rural and remote areas. It noted that providing co-location in a rural or remote area would incur higher logistics and mobilization costs, in addition to the higher costs induced by difficult terrain and access to hill stations.

Jaring supported the need for separate prices in each area, as the costs for "bringing up" the facilities for co-location were different in each area.

Packet One's opinion was that there should be separate prices for urban, rural and remote areas because the revenue stream and costing are different in these areas.

Sacofa believed that prices should be differentiated between urban, rural and remote areas and, in addition, supported higher prices for East Malaysia. Sacofa provided data on the difference in material and operations prices between Peninsular Malaysia and East Malaysia.

Telekom Malaysia believed that there may be significant differences in cost based on the geographic placement of co-location facilities. It also noted the likelihood of cost differences based on different building types and indoor or outdoor configurations. Given the variation in locations and configurations, Telekom Malaysia maintained that commercial negotiation should be used to set prices for co-location.

12.3 Model updates

Subsequent to the receipt of Public Inquiry submissions, and taking into account feedback, the SKMM has updated the co-location model with common cost mark-ups from the Fixed and Mobile models.

12.4 SKMM's final views

The SKMM notes the comments regarding variations in costs, and remains of the view that using three cost categories is appropriate and reflects industry practice to date.

On Fiberail's comment on Co-location services, there appears to be some misunderstanding by Fiberail. The SKMM would like to clarify that Network Co-location service is modelled based on its definition in the Access List, which is for the purpose of providing access to other facilities and services on the Access List.

The SKMM notes that there are site specific cost variations, and is of the view that these impact primarily on the site preparation costs rather than the marginal cost of providing space. The SKMM's final view is not to regulate site preparation costs, as these vary too greatly from site to site for a single averaged rate to be appropriate.

The SKMM's final view is to set regulated prices for the physical co-location space (including common services but excluding power costs) provided by one service provider to another service provider. The price is based on the marginal cost of providing the space based on the costs for a mobile operator (as explained in the PI Paper). For the avoidance of doubt, the SKMM notes that the services included in the regulated price for space include environmental services (heat, light, ventilation and air-conditioning), site security (on average), and ongoing maintenance but do not include site-specific preparation or additional facilities such as cable routing, cable racking and any additions to the access route.

The final regulated prices for physical co-location space at switching sites, submarine cable landing centres, earth stations and exchange buildings are shown in the following table.

Table 24: Physical Co-location Space from a Network Service Provider Final Prices

Physical Co-Location

	Units	2013	2014	2015
Space (inc. services)	RM/sqrm/ year	201.92	216.73	233.00

Source: Co-location Model

13. NEXT STEPS

This section highlights the next steps arising from this PI Report and the Commission Determination on Mandatory Standard on Access Pricing (MSAP).

The implications for existing access agreements are as follows:

- The access agreements shall be amended as soon as practicable to comply with the Determination and shall be submitted for registration by the SKMM as required under section 150 of the CMA.
- Parties to access agreements shall apply the access prices in the Determination once the Determination comes into effect.

Any service provider that offers the regulated facilities or services in the Determination must modify its Access Reference Document no later than 30 days from the date on which the Determination takes effect.

SKMM

14 December 2012