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Prepared For:

Connect Holdings Limited;

Pacific Internet Limited; and

Pacific Internet Corporation Private Limited

Analysis of competitive effects of proposed acquisition of Pacific Internet Limited by Connect Holdings Limited

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1. INTRODUCTION

CRA International (CRA) has been engaged to provide expert economic advice on the likely competitive effects of the proposed acquisition of Pacific Internet Limited (PacNet) by Connect Holdings Limited (Connect).

In summary, our economic analysis of the proposed transaction leads us to conclude that:

- The proposed consolidation potentially gives rise to the pass through of vertical efficiencies, including reduced transaction costs and common cost savings, leading to enhanced consumer welfare.

- In most relevant markets, the proposed transaction would not result in any market aggregation, because only one of the consolidating businesses is present in that market.

- In the few downstream markets in which both of the consolidating businesses are present, the aggregation does not give rise to any competition concerns, because there is entrenched competition from numerous other players and/or barriers to entry and expansion are likely to be low.

- The proposed consolidation would give the parties neither the ability nor the incentive to increase upstream prices or withhold capacity to foreclose downstream rivals, because those downstream rivals can easily switch to acquire the upstream services from other upstream suppliers, who have excess capacity and who compete vigorously.

- The proposed consolidation would not give the parties any incentive to undercut downstream rivals' prices to drive them from the downstream markets ("predatory pricing"). There is entrenched competition in downstream markets from established firms, meaning exclusion is most unlikely. Moreover, barriers to (re)entry and expansion in those downstream markets are likely to be low. Hence, it would not be possible for the consolidated firm to raise its prices sufficiently to recoup the profits it would have to sacrifice.

1.1. RELEVANT PARTIES

1.1.1. Connect and Affiliated Parties

Connect wholly owns the Asia Netcom group of companies (ANC). Connect Holdings Limited is wholly owned, in turn, by Connect International Limited. The owners of Connect International Limited are an investor group led by, collectively, Ashmore Investment Management, Spinnaker Capital and Clearwater Capital Partners (the Investors). The C2C group of companies (C2C) is also wholly owned by the same group of Investors.

ANC operates an extensive telecommunications network infrastructure in the Asia Pacific region, including the East Asia Cable (EAC) system, as well as extensive terrestrial backhaul facilities and telehouses in all key Asian markets. Utilising these strategic assets, ANC provides a comprehensive portfolio of city-to-city connectivity, data communications and IP-based solutions and services to enterprise, Internet Service Provider (ISP) and carrier customers in the Asia Pacific region. The company is headquartered in Hong Kong with local offices in all major Asian markets, plus the US and Europe.

C2C owns and operates the C2C cable system and provides principally indefeasible rights of use (IRUs) on its cable capacity and international private leased circuits (IPLCs). C2C does not provide ISP services in Singapore.

1.1.2. Pacific Internet

PacNet operates as an ISP in Singapore and other regional centres including Australia, Hong Kong, Thailand, Philippines, India and Malaysia. PacNet is a relatively small ISP in Singapore and provides dial-up and broadband Internet access services, small office connectivity services, leased line services, as well as web-hosting, and other value-added services (such as mail and firewall services).[1]

[Confidential]

1.2. Proposed Transaction

Connect proposes to fully acquire PacNet through the purchase of 100 per cent of the issued share capital of PacNet. Connect's business rationale for the proposed acquisition is to expand its geographic reach in key Asian markets including India, Malaysia and Thailand. In addition, PacNet will allow the group to accelerate its entry into the corporate SME market segment, which is experiencing significant demand growth for a broader set of telecommunications requirements. The integration of PacNet's products and services with Connect's current suite of services will enable the group to meet substantially all of the voice and data requirements of any single corporate client.

Between 10 July and 22 November 2006, Connect acquired 1,871,287 shares in PacNet by way of open market transactions. On 12 January 2007, Vantage Corporation Limited announced it had entered into a Sale and Purchase Agreement for the sale of 2,250,000 ordinary shares in the capital of PacNet to Connect. We are advised that the transfer of the 2,250,000 shares formerly held by Vantage settled on 22 January 2007. As at the present date, Connect's stake in PacNet currently amounts to 29.84 per cent of issued share capital.

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1 A list of products supplied by PacNet is available at http://www.pacific.net.sg/business/products/. Accessed on 3 February 2007.

Connect made an announcement of a pre-conditional voluntary general offer on 12 January 2007 for the balance of the issued share capital of PacNet. Connect can only launch that offer once it has obtained the approval of the Infocomm Development Authority of Singapore (IDA). Upon receipt of IDA's approval and subject to the satisfaction or waiver of the other pre-conditions to the said pre-conditional offer, Connect will be required to make an immediate voluntary conditional general offer announcement (Offer Announcement), and thereafter despatch the relevant offer document to the shareholders of PacNet not earlier than 14 days and not later than 21 days from the date of the Offer Announcement.

The proposed acquisition would result in the common ownership (by Connect and, ultimately, the Investors) of two entities which currently stand in a vertically separated relationship: the Investors would own upstream cable operators ANC and C2C as well as a downstream service provider (PacNet). It is unclear at this time to what extent these businesses might in future be consolidated to form a further vertically integrated enterprise.

ANC also participates, to a relatively limited extent, in some downstream services markets in Singapore. To the extent that both ANC and PacNet both provide services in downstream markets, the proposed acquisition would involve some degree of horizontal aggregation, although, as discussed below, the extent of this would generally be trivial.

1.3. Report Outline

The remainder of the report is structured as follows:

- Section 2 summarises the market definitions adopted for the purpose of analysing the proposed transaction;
- Section 3 considers the potential pro-competitive effects that would occur as a result of the proposed transaction;
- Section 4 sets out our views as to the likely competitive dynamics that would arise as a result of the proposed transaction;
- Sections 5 and 6 address whether possible anti-competitive effects might result from the proposed consolidation:
  - Section 5 analyses the potential for horizontal effects within the relevant markets; and
  - Section 6 considers the potential for raising rivals' costs and predatory vertical foreclosure;
- Section 7 considers the likely economic impacts if conditions were attached to an authorisation of the proposed transaction; and
- Section 8 summarises our conclusions.

2. RELEVANT MARKETS

For the purpose of this analysis, we adopt the following working market definitions:

Upstream markets:

- A wholesale market for the supply of international cable capacity in Singapore; and
- A wholesale market for the supply of backhaul in Singapore.

We proceed on the basis that the relevant geographic market is Singapore but note that there are good reasons to believe that this is a conservative market definition.[2]

Downstream (retail) markets:

- A retail market for residential dial-up Internet access services in Singapore;
- A retail market for corporate dial-up Internet access services in Singapore;
- A retail market for residential broadband Internet access services in Singapore;
- A retail market for corporate broadband Internet access services in Singapore;
- A retail market for global Internet access roaming services in Singapore;
- A retail market for domestic managed data services in Singapore;
- A retail market for international managed data services in Singapore;
- A retail market for leased line Internet access services in Singapore;
- A retail market for co-location services in Singapore;
- A retail market for international IP transit services in Singapore; and
- A retail market for IPLC services in Singapore.

We make it clear at the outset that we adopt these working market definitions noting that they are likely to be conservative, in the sense of tending to *accentuate* the possibility of finding competitive detriments. We further emphasize that a more formal market definition analysis would likely imply broader markets than those we have adopted and would therefore indicate a correspondingly lower likelihood of competitive detriment.

2 We consider that a regional market may be more appropriate. In particular, because a substantial portion of Internet traffic (about 35 per cent from CRA's calculations in *Economic analysis of competitive effects resulting from proposed common ownership of C2C and ANC – Singapore*, 7 July 2006), namely transit traffic, is not latency intolerant, there is likely to be substantial scope for alternative (i.e. indirect) routing of data. This scope for substitution implies a broader market than our adopted market definition.

The conclusions we draw from our competition analysis do not strongly depend upon the working market definitions adopted, particularly in respect of most downstream markets. The consolidation will result in very little market aggregation in the provision of most downstream services and none in the provision of upstream services. This diminishes the importance of precisely defining the downstream markets, and it is for this reason that we have adopted those working market definitions listed above. Were there to be significant market overlap between the relevant businesses in the provision of downstream services, this might have warranted a more formal and rigorous market definition analysis. Since this is not the case, we have adopted conservative working market definitions, recognising that this has little bearing on our conclusions, and will likely overstate anti-competitive effects, if any.

3. POTENTIAL PRO-COMPETITIVE EFFECTS

The proposed consolidation has the potential to give rise to pro-competitive benefits, at least in the medium to long term, for the following reasons:

- The proposed acquisition will potentially give rise to vertical efficiencies[3] (sub-section 3.1);
- The current market structure means consumers are likely not to have reaped the full benefits of competition (sub-section 3.2); and
- To the extent that the merged entity is able to achieve vertical efficiencies, the proposed acquisition has the potential to ensure that these benefits are more fully and more rapidly reaped by consumers (sub-section 3.3).

3.1. POTENTIAL VERTICAL EFFICIENCIES

The business rationale for the proposed acquisition is to better serve existing and new customer and geographic segments, by exploiting the synergies associated with combining the upstream assets of the Investors with PacNet's downstream operations.

3 In addition to vertical efficiencies, the proposed transaction might give rise to other efficiencies and consumer benefits. For instance, to the extent that the proposed merger involves the joining of complementary product sets (e.g. as is the case in respect of leased line Internet access services) or perhaps the integration of networks across geographical space, such initiatives have the potential to result in both cost savings for the merged entity as well as enhance consumer welfare.

Since the proposed transaction essentially involves combining assets and operations at different vertical stages, the parties must realise vertical efficiencies between upstream and downstream stages of production in order to fully achieve their commercial objectives. We believe that vertical efficiencies might include (although not be limited to) lower transaction costs for acquiring international cable capacity and improved common cost efficiencies. The extent to which vertical efficiencies can be achieved will depend upon the closeness of integration, coordination and cooperation between the relevant parties.

3.2. UNREALISED CONSUMER BENEFITS

It is likely that the two largest ISPs in the Singapore markets (SingTel and StarHub), both of which are vertically integrated as owners of submarine cables landing in Singapore and providers of downstream services, have already achieved these types of efficiencies.

Although SingTel and StarHub are likely to have achieved these efficiencies, and perhaps passed some of the gains to consumers in the form of lower prices, it is possible that:

- First, full pass-through of the efficiency gains to consumers has not occurred; and
- Second, the rate of pass-through has not been as great as it could potentially be.

In particular, it is possible that the competitive tension between SingTel and StarHub is not as strong as it could be, because of the likely significant infra-marginal losses associated with price reductions relative to customer gains from lower prices.

That is, if SingTel and StarHub were to reduce prices, these lower prices would inevitably have to be offered to all customers, not just marginal customers. To the extent that SingTel and StarHub have substantial customer bases in relevant markets, the gains from lowering prices (in the form of margins associated with any new customers) would likely be outweighed by the losses in margins from lowering prices to existing customers. Because of these offsetting effects, SingTel and StarHub would not face as strong incentives to compete aggressively on price, compared with the incentives that a smaller firm that does not have a substantial established client base would face.

3.3. POTENTIAL BENEFITS ARISING FROM PROPOSED TRANSACTION

To the extent that vertically integrated operators have already realised efficiencies which have not yet been passed on to consumers, the advent of a new vertically integrated operator, competing vigorously with SingTel and StarHub to win market share from them, can be expected to “unlock” those efficiency gains and ensure they are fully and more rapidly passed through to end-users, hence maximising consumer welfare.

This would particularly be the case if the third player were one with markedly smaller market share, as it is with PacNet, in which case the asymmetry in size vis-à-vis SingTel and StarHub would provide incentives for PacNet to compete vigorously.

More specifically, PacNet, as it is a relatively small player in downstream markets, would have the incentive to compete vigorously with SingTel and StarHub – which are significantly larger integrated players – on price and quality in order to win market share from them. For PacNet, aggressive price competition would have relatively limited downside effects associated with lower pricing to infra-marginal customers, compared with the potentially large upside gains associated with winning customers from SingTel and StarHub.

That is, if PacNet were to reduce prices, because it currently has only small customer bases in relevant markets, any losses in margins associated with price reductions would apply only to a small volume of existing customers, whereas the potential gains associated with winning new customers would be high.

4. LIKELY COMPETITIVE DYNAMICS

We believe that the proposed acquisition would likely give rise to the following competitive dynamics:

- As a result of the proposed acquisition, the market structure would be characterised by 3 firms (SingTel, StarHub and ANC/PacNet) vertically integrated in upstream cable ownership and downstream service markets, competing with downstream firms that are less vertically integrated.
- Amongst the 3 vertically integrated firms, the effect would be to increase rivalry between these firms, as ANC/PacNet would have the ability and incentives to vigorously compete with SingTel and StarHub. This would result in increased competition and consumer benefits.
- Broader benefits to competition and consumers can be expected to flow from the influence of the proposed transaction on non-vertically integrated downstream firms.
- In particular, ANC/PacNet could and likely would charge different (lower) imputed prices to its own downstream operations compared with prices charged to downstream third parties, reflecting the efficiencies associated with internal supply.
- If so, non-vertically integrated downstream rivals would face higher upstream input costs than PacNet.[4]

4 The significance of this differential will be discussed in section 6.

- Assuming that some differential might prevail between ANC/PacNet and other retail market participants, downstream suppliers not vertically integrated to the extent of SingTel, StarHub and Connect would face competitive pressures to achieve other efficiencies which reduce their downstream costs and hence enable them to match the lower downstream prices that SingTel, StarHub and ANC/PacNet would be able to charge, or maintain a price premium through improved product offerings to consumers (e.g. via product differentiation, better customer service, etc).

- To the extent that these non-vertically integrated downstream suppliers can achieve these efficiencies or improve product offerings, consumer welfare would be further enhanced.

The full extent to which these dynamics would arise obviously depends upon the extent to which the proposed firm could realise vertical and other efficiencies. In short, we believe that *prima facie* the proposed acquisition would likely preserve or, if anything, intensify competition in relevant markets.

The following sections assess whether it is possible that the proposed consolidation might have potential anti-competitive effects. We first dismiss the potential for horizontal anti-competitive effects, and then explain why vertical anti-competitive effects are unlikely.

5. HORIZONTAL EFFECTS

In this section we analyse the horizontal anti-competitive effects associated with the proposed transaction. In short, we believe such effects are most unlikely because, in all relevant markets, one or more of the following applies:

- The proposed transaction would not result in any horizontal market aggregation; and/or

- The proposed transaction would result in minimal market aggregation; and/or

- There is entrenched competition in the market (i.e. there are a number of established and sophisticated competitors currently supplying the market that would continue to compete vigorously irrespective of the proposed transaction); and/or

- Barriers to entry and expansion are relatively low or otherwise surmountable.

The following sub-sections elaborate on our views.

5.1. Upstream Market for International Cable Capacity

ANC and C2C own the EAC and C2C submarine cable systems, respectively. The EAC and C2C cable systems together have a total design capacity of 10,240 Gbps, of which 240 Gbps is lit. CRA has previously estimated the combined market share of C2C and EAC to be 13.61% using *operational capacity* (that is, the capacity owned by the parties to the extent they have not alienated operational control by selling IRUs or leasing the capacity out).[5] We note that the IDA has previously estimated that ANC and C2C together have a market share of above 40 per cent of current lit capacity from Singapore to the Asia-Pacific region.[6] While we reserve our views in respect of the IDA's estimate, we observe that regardless of what shares ANC and C2C have in this market, no horizontal aggregation of market share will result from the proposed consolidation.

[Confidential]

As a result, the proposed transaction will not give rise to any horizontal market aggregation in the wholesale market for international cable capacity in Singapore and, hence, will have no adverse horizontal competitive effects in that market.

5.2. Backhaul Capacity

The IDA has previously defined the backhaul capacity market to consist of:[7]

> *...services that use fibre optic links to enable a Licensee that has capacity on an international submarine cable system to transport that capacity from a cable landing station in Singapore to the Licensee's international gateway or point-of-presence ("POP") in Singapore. The Backhaul market includes both self-provided backhaul (i.e., the provision of backhaul, by a Licensee, to itself) and third-party backhaul (i.e., the provision of wholesale backhaul, by a Licensee, to another Licensee).*

In the same decision, we note that IDA had determined that SingTel continues to be dominant in the Singapore backhaul market with a market share of around 50 per cent. The other main participants in this market include Reach and StarHub.[8]

5 CRA, *Economic analysis of competitive effects resulting from proposed common ownership of C2C and ANC – Singapore*, section 3.1. (This is a Confidential Report submitted to IDA on 12 July 2006)

6 IDA, *Explanatory Memorandum on the Decision of the IDA of Singapore in Relation to the Proposed Change in Ownership in Asia Netcom Singapore Pte Ltd*, 5 September 2006, para 8.

7 IDA, *Explanatory Memorandum to the Decision of the IDA of Singapore on the Request by SingTel for Exemption from Dominant Licensee Obligations with respect to the "International Capacity Services" Market*, 12 April 2005, para 49.

8 IDA, *Explanatory Memorandum to the Decision of the IDA of Singapore on the Request by SingTel for Exemption from Dominant Licensee Obligations with respect to the "International Capacity Services" Market*, 12 April 2005, paras 87 and 88.

Adopting the IDA market definition, ANC and C2C have, through ownership/IRUs, operational control of some backhaul services in Singapore.[9]

PacNet, on the other hand, **[Confidential]** in Singapore.

As a result, the proposed transaction will not give rise to any horizontal market aggregation in the wholesale market for backhaul services in Singapore and, hence, will have no adverse horizontal competitive effects in that market.

5.3. MARKETS FOR DOWNSTREAM SERVICES

Having concluded that the proposed transaction will not give rise to any horizontal effects in the upstream markets for international cable capacity and backhaul, in this sub-section we analyse possible horizontal effects in relevant markets for downstream services. We conclude that anti-competitive outcomes in the markets for downstream services are unlikely.

Our discussion of possible horizontal effects in the provision of these services can be kept brief. This is because, in almost all relevant adopted downstream markets, the proposed transaction will not lead to any market aggregation. In particular, ANC and C2C do not provide the following services in Singapore:

- Residential dial-up Internet access services;
- Corporate dial-up Internet access services;
- Residential broadband Internet access services;
- Corporate broadband Internet access services;[10] and
- Global Internet access roaming services (that is, global Internet access at local call charges).

PacNet's presence in each of these downstream markets is detailed below:[11]

- PacNet does not have significant market power[12] in the residential dial-up internet services market. PacNet has **[Confidential]** customers using residential dial-up Internet access services[13] and less than **[Confidential]** share in this market.

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9 CRA, *Economic analysis of competitive effects resulting from proposed common ownership of C2C and ANC – Singapore*, section 3.2. (This is a Confidential Report submitted to IDA on 12 July 2006)

10 This refers to corporate broadband Internet access which is not provided over a dedicated connection to a provider's IP backbone infrastructure.

11 Measures of the overall market size for each adopted downstream market were obtained from the IDA's *Statistics on Telecommunications Services for 2006 (Jul – Dec)*, available at http://www.ida.gov.sg/Publications/20061205181639.aspx (accessed 15 February 2007).

- PacNet does not have significant market power in the corporate dial-up internet services market. PacNet has **[Confidential]** customers using corporate dial-up Internet access services[14] and less than **[Confidential]** share in this market.

- PacNet does not have significant market power in the residential broadband internet services market. PacNet has **[Confidential]** customers using residential broadband Internet access services[15] and less than **[Confidential]** share in this market.

- PacNet does not have significant market power in the corporate broadband internet services market. PacNet has **[Confidential]** customers using corporate broadband Internet access services[16] and less than **[Confidential]** share in this market.

- PacNet has only a **[Confidential]** of Global Internet access roaming customers. PacNet has **[Confidential]** customers that do not subscribe to any other service.[17]

As the proposed transaction would not result in horizontal market aggregation in any of these markets, no horizontal competition concerns would arise with respect to these markets, as presented in Table 1.

We nonetheless note that even if there were aggregation in the provision of these services, adverse competitive effects would be unlikely. In particular, although we have not analysed in detail the supply of these services in Singapore, in our experience of analysing markets for those types of services just described, we have found such markets in other jurisdictions to contain several if not numerous entrenched competitors and to otherwise be contestable. We have no reason to believe that equivalent markets in Singapore would be significantly different from those in other jurisdictions.

Table 1: PacNet and ANC/C2C market shares and competitive effects in various downstream markets

Market	PacNet Share	ANC/C2C Share	Competitive Effect
Retail market for residential dial-up Internet access services in Singapore	[Confidential]	Zero	No aggregation

12 Where "significant market power" is defined in section 6.3.1 of the Telecommunications Consolidation Guidelines 2005.

13 PacNet company data as at 31 December 2006.

14 PacNet company data as at 31 December 2006.

15 PacNet company data as at 31 December 2006.

16 PacNet company data as at 31 December 2006.

17 PacNet company data as at 31 December 2006.

Retail market for corporate dial-up Internet access services in Singapore	**[Confidential]**	Zero	No aggregation
Retail market for residential broadband Internet access services in Singapore	**[Confidential]**	Zero	No aggregation
Retail market for corporate broadband Internet access services in Singapore	**[Confidential]**	Zero	No aggregation
Retail market for global Internet access roaming services in Singapore	**[Confidential]**	Zero	No aggregation

The other downstream (retail) markets identified in Section 2 above and which will result in some (albeit, in some cases, negligible) aggregation are considered in more detail below. These are the markets for supply of managed data services (MDS), leased line Internet access services, co-location services, international IP transit services and IPLC services in Singapore.

5.3.1. Managed Data Services

As noted above, we proceed on the basis that there are separate markets for domestic managed data services (domestic MDS) and international managed data services (IMDS).[18] These markets are for the supply of packet-based services (e.g. ATM, Frame Relay, and IP-VPN) that provide managed connectivity among multiple customer sites, and allow for data to be prioritised. IMDS services are distinguished from domestic MDS services by the fact that in the former market the service is provided to customers having at least one site located outside of Singapore.

In analysing competitive effects in these markets, we note that, in respect of IMDS services, the market subject to IDA's jurisdiction is the sale of IMDS to customers in Singapore (that is, "A-end" sales).[19]

With this in mind, we first note that the proposed transaction would **[Confidential]**. Second, both parties have **[Confidential]**. Both ANC and PacNet have a **[Confidential]** in the supply of MDS services. We do not have information and data that distinguishes between domestic and international MDS customers. However, our understanding of the participation and customer bases of ANC and PacNet in the supply of MDS services more generally is summarised as follows:

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18 There are reasons to suggest that domestic and international managed data services are supplied in a single retail MDS services market – in particular, because of scope for supply side substitution – although as will be shown, whether domestic and international managed data services are supplied in separate markets or a single market has little bearing on our conclusions.

19 IDA, *Explanatory Memorandum to the Decision of the IDA of Singapore on the Request by SingTel for Exemption from Dominant Licensee Obligations with respect to the "International Capacity Services" Market,* 12 April 2005, para 102.

- *ATM*: We understand that ANC **[Confidential]** in Singapore.[20] PacNet has a **[Confidential]** of ATM customers. PacNet has **[Confidential]** customers using ATM.[21]

- *Frame Relay*: We understand that ANC has a very small number of Frame Relay customers. ANC has **[Confidential]** customers using Frame Relay.[22] PacNet **[Confidential]** in Singapore.

- *IP-VPN*: We understand that PacNet's IP-VPN service differs significantly from ANC's IP-VPN products in terms of speed, security and pricing. Notwithstanding that, both ANC and PacNet only have a **[Confidential]** of IP-VPN customers – PacNet has **[Confidential]** customers[23] and ANC has **[Confidential]** customers[24].

Given the relatively small size of the customer bases of ANC and PacNet in the supply of MDS services, it is clear that, if these customer bases were to be divided between domestic and international MDS markets, then each company's shares of each of those markets would be correspondingly lower.

20 ANC company data as at 31 December 2006. This number represents the customers to whom ANC's Singapore-based sales force sold ANC's ATM product as at the end of CY2006. It may include sales by the same team of that service to customers outside Singapore. It may also exclude sales of that service to customers inside Singapore by ANC sales staff based in other locations.

21 PacNet company data as at 31 December 2006.

22 ANC company data as at 31 December 2006. This number represents the customers to whom ANC's Singapore-based sales force sold ANC's Frame Relay product as at the end of CY2006. It may include sales by the same team of that service to customers outside Singapore. It may also exclude sales of that service to customers inside Singapore by ANC sales staff based in other locations.

23 PacNet company data as at 31 December 2006.

24 ANC company data as at 31 December 2006. This number represents the customers to whom ANC's Singapore-based sales force sold ANC's IP-VPN product as at the end of CY2006. It may include sales by the same team of that service to customers outside Singapore. It may also exclude sales of that service to customers inside Singapore by ANC sales staff based in other locations.

In addition to ANC and PacNet, there are a large number of competitors in MDS markets, as noted by the IDA. These competitors include large operators such as SingTel[25], StarHub, AT&T, BT, Cable & Wireless, Equant, MCI, Infonet and Sprint.[26] Further, there are likely to be low barriers to entry and expansion. The fact that the IMDS market is competitive was again confirmed by IDA in a subsequent decision.[27]

On this basis, we conclude that the proposed transaction is unlikely to pose any competition concerns in the supply of domestic or international MDS services.

5.3.2. Leased Line Internet Access Services

Leased line Internet access services provide business customers with a dedicated, always-on, high-speed connection to the Internet. Leased line Internet access services for business users differ from retail broadband Internet access in connecting the customer directly to the provider's IP backbone infrastructure. Direct connection to an IP backbone allows better control of service quality and security.

It is also important to distinguish between leased line Internet access services that are designed for and offered to business users and leased line Internet access services that are designed for and offered to ISPs and content providers. The former is typically configured to provide access at rates ranging from 64 Kbps to 100 Mbps. By contrast, leased line Internet access service offered to ISPs offers bandwidth in the range from 45 Mbps to Gigabit Ethernet (1Gbps).

Leased line Internet access products may be provided at a range of bandwidths and with differing service quality parameters. The larger the corporation and the more users it has, the greater its Internet usage will be and hence the higher its bandwidth requirement will be. Larger and more sophisticated corporations commonly have higher service quality and security requirements.

Both ANC and PacNet supply leased line Internet access services of some kind, though the exact nature of the service and targeted customers differ:

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25 The IDA has previously estimated SingTel's market share in IMDS to be about 35 per cent. IDA, *Explanatory Memorandum to the Decision of the IDA of Singapore on the Request by SingTel for Exemption from Dominant Licensee Obligations with respect to the "International Capacity Services" Market*, 12 April 2005, para 102.

26 *Ibid.*

27 IDA, *Explanatory Memorandum on the Decision of the IDA regarding: (a) Request by AT&T Corp, AT&T Worldwide Telecommunications Services Singapore Pte Ltd and SBC Communications Inc for Exemption from the Requirement to File a Long Form Consolidation Application, (b) Short Form Consolidation Application in Relation to the Proposed Change in Ownership in AT&T Worldwide Telecommunications Services Singapore Pte Ltd*, 14 August 2005, para 40(a).

- PacNet supplies largely lower bandwidth leased line Internet access services targeted mainly at SMEs. PacNet offers direct Internet access (DIA) services with connection speeds from 64 Kbps up to 2 Mbps.[28] PacNet has **[Confidential]** customers using DIA.[29]

- ANC supplies largely higher bandwidth leased line Internet access services, targeted principally at large corporate users. ANC's "Direct Internet Access" product is aimed at large corporate users with higher bandwidth requirements, ranging from sub-rate (e.g. 64 Kbps) up to Fast Ethernet (100 Mbps). ANC is a very small player in the Singaporean market for leased line Internet access services. In Singapore, ANC mostly supplies its Direct Internet Access service at **[Confidential]**. ANC has only a small number (**[Confidential]**) of DIA customers in Singapore.[30]

Although the precise overlap between these products is not clear, based on available information the overlap is unlikely to be large, i.e., the products supplied are likely to be complementary rather than overlapping. In other words, any aggregation in supply of leased line Internet access of a particular bandwidth is likely to be slight.

Irrespective of the extent of precise overlap in supply – or indeed, the precise market definitions for leased line services – there are unlikely to be adverse competitive effects arising from the proposed transaction, because the merged entity will continue to face competitive constraints across the full spectrum of leased line Internet access services. The competitive constraints arise from five sources.

First, there is entrenched competition in the market. In addition to PacNet and ANC, players in this market include SingTel, StarHub, Asiakomnet Multimedia, AT&T, Belgacom, BT, Cable & Wireless, FLAG Telecom, KDDI, Reach, Verizon, and VSNL. These are mainly large and established multi-national telecommunications carriers or service providers. Many of these firms are large and established multi-national telecommunications carriers or service providers. These firms generally provide a whole suite of leased line services. Although these firms might not all offer the specific leased line Internet access services provided by the relevant parties, many of them offer similar services that consumers would likely view as effective substitutes. Furthermore, those firms supplying leased line services, but not the particular services currently supplied by ANC and PacNet, would face few impediments to supplying equivalent services to those currently offered by the relevant parties.

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28 Available at http://www.pacific.net.sg/business/article.php?id=159. Accessed on 3 February 2007.

29 PacNet company data as at 31 December 2006. These DIA customers comprise a subset of what PacNet classifies as corporate leased line access service customers. PacNet has **[Confidential]** customers classified as purchasing corporate leased line access services.

30 ANC company data as at 31 December 2006. This number represents the customers to whom ANC's Singapore-based sales force sold ANC's Direct Internet Access product as at the end of CY2006. It may include sales by the same team of that service to customers outside Singapore. It may also exclude sales of that service to customers inside Singapore by ANC sales staff based in other locations.

Second, at the low bandwidth stratum of the market, suppliers of leased lines Internet access products are constrained by the price of standard broadband Internet access products, insofar as quality is not a main concern.[31]

Third, also at the low bandwidth stratum, leased line Internet access services can be supplied over the twisted-pair copper network. Access to SingTel's network (or any other copper network) is facilitated by access regulation by the IDA through the Telecom Competition Code 2005 (the Code)[32] and, hence, any firm can in theory supply these services. In other words, *prima facie*, entry barriers appear low.

Fourth, higher bandwidth leased line Internet access services to larger corporate customers are typically supplied over fibre optic and/or coaxial cables. Access to StarHub's hybrid fibre-coaxial (HFC) network (or any other cable network) is also regulated by the Code and, hence, any firm in theory can supply these services. Hence, *prima facie*, entry barriers again appear low.

Finally, in respect of higher bandwidth leased line Internet access services, it is our experience in analysing telecommunications markets that supply of telecommunications services to larger corporate customers is extremely competitive, due to the revenues at stake from supplying these customers and the process by which these customers procure these services.

To summarise, irrespective of the aggregation in certain leased line Internet access services, we do not believe there are likely to be competitive effects in the supply of leased line services.

5.3.3. Co-location services

Co-location services provide customers with a secure and environmentally controlled location to house their network equipment.

In addition to PacNet and ANC, players in this market include SingTel, StarHub, Ascent Media, AT&T, BT, Equinix, FLAG Telecom, Global Switch, KDDI, Verizon, and VSNL. These are mainly large and sophisticated multi-national telecommunications carriers or service providers.

PacNet has **[Confidential]** customers in this market.[33]

31 In this respect, the adopted leased line Internet access market is clearly conservative.

32 SingTel, as a Dominant Licensee, is required by the Code to provide telecommunications services on just, reasonable and non-discriminatory terms (section 4), and is also required to provide interconnection related services and mandated wholesale services to other Licensees (section 6.2). In addition, Facilities-Based Operators (FBOs) are generally required to provide access to their network(s) to other Licensees.

33 PacNet company data as at 31 December 2006.

ANC has a small number of customers (**[Confidential]**) in this market.[34]

We do not have data for the size of the co-location services market as a whole in Singapore. However, we note that co-location services are provided by many large and entrenched competitors and there are relatively low barriers to entry and expansion. Reflecting this, there are at least 20 data centres providing facilities management services in Singapore as noted by the IDA.[35]

On this basis, we conclude that the proposed transaction is highly unlikely to pose any competition concerns in the retail market for the supply of co-location services in Singapore.

5.3.4. International IP Transit Services

The IDA has previously defined the International IP Transit market as consisting of:[36]

> *...the provision of a service, for compensation, in which one operator terminates international Internet traffic on its network or transits the Internet traffic for termination on a third operator's network. This service does not include the provision of domestic access facilities, such as LLCs.*

The IDA has also determined the geographic market to be national.[37]

For the purpose of this analysis, we simply adopt the IDA's market definitions for IP Transit services.

PacNet offers IP Transit services **[Confidential]**. PacNet has **[Confidential]** customers using IP Transit.[38]

ANC offers IP Transit services **[Confidential]**. ANC has **[Confidential]** customers using IP Transit in Singapore.[39]

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34 ANC company data as at 31 December 2006. This number represents the customers to whom ANC's Singapore-based sales force sold ANC's co-location service as at the end of CY2006. It may include sales by the same team of that service to customers outside Singapore. It may also exclude sales of that service to customers inside Singapore by ANC sales staff based in other locations.

35 IDA, *Explanatory Memorandum to the Decision of the IDA of Singapore on the Request by SingTel for Exemption from Dominant Licensee Obligations with respect to the "International Capacity Services" Market*, 12 April 2005, para 112.

36 *Ibid*, para 64.

37 *Ibid*, para 65.

38 PacNet company data as at 31 December 2006.

In light of available data, we are of the view that there is highly unlikely to be any significant aggregation as a result of the proposed transaction.

In addition to ANC and PacNet, there are a large number of competitors in this market as noted by the IDA. These competitors include SingTel, StarHub, Equant, MCI, Reach and Sprint.[40] Further, there are likely to be low barriers to entry and expansion. Finally, we note that IDA has previously determined that the market for international IP Transit is effectively competitive.[41]

On this basis, we conclude that the proposed transaction is unlikely to pose any competition concerns in the International IP Transit services market.

5.3.5. International Private Leased Circuit Services

The terrestrial IPLC market consists of services "provided over submarine cables, that offer customers the exclusive use of a point-to-point, dedicated transparent transmission path for voice, data or video between a location in Singapore and a location outside of Singapore".[42]

Both ANC and C2C offer IPLC services in Singapore. In addition, PacNet also offers IPLC services in Singapore.

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39 ANC company data as at 31 December 2006. This number represents the customers to whom ANC's Singapore-based sales force sold ANC's IP Transit product as at the end of CY2006. It may include sales by the same team of that service to customers outside Singapore. It may also exclude sales of that service to customers inside Singapore by ANC sales staff based in other locations.

40 IDA, *Explanatory Memorandum to the Decision of the IDA of Singapore on the Request by SingTel for Exemption from Dominant Licensee Obligations with respect to the "International Capacity Services" Market,* 12 April 2005, para 109.

41 *Ibid*, para 108.

42 *Ibid*, para 53. We do not include satellite IPLC services in this market. In respect of Satellite IPLC services, we note that PacNet **[Confidential]** services from Singapore. ANC has a very small number of Satellite IPLC customers originating from Singapore. **[Confidential]**. Hence, there will be no market aggregation in respect of satellite IPLC services and, in any event, the merged entity would have a **[Confidential]**. Finally, we note that IDA has previously determined that SingTel has near 100 per cent share of this market nationally, and internationally this market is effectively competitive. *Ibid*, para 133-134.

ANC and C2C have **[Confidential]** IPLC customers.[43] Moreover, PacNet **[Confidential]** IPLC customers.[44] Hence, we conclude that there will be virtually no market aggregation in the IPLC services market as a result of the proposed transaction. It also is likely that the merged entity's total customer base would be small relative to the size of the overall market. Consistent with this, IDA has previously found that SingTel has more than 60 per cent market share in this market,[45] and there are many other players in this market (including Cable & Wireless, MCI, Reach and StarHub), at least some of which are likely to have customer bases that are significantly larger than those of the consolidating firms. It is therefore unlikely that the consolidating firms would be in a position to influence market outcomes. The ability for the consolidating firms to influence market outcomes would be further undermined by the fact that competitors would appear to face few barriers to expansion. We therefore conclude the proposed transaction would unlikely have anti-competitive effects in the retail market for IPLCs in Singapore.

5.3.6. Summary

Table 2 presents customer information for PacNet and ANC/C2C in downstream markets where overall market size information was unavailable. In each of these markets, we conclude that the proposed transaction is unlikely to pose any competition concerns for the reasons outlined above.

Table 2: PacNet and ANC/C2C customer numbers and competitive effects in various downstream markets

Market	PacNet Customers	ANC/C2C Customers	Competitive Effect
Retail market for domestic /international managed data services in Singapore	[Confidential]	[Confidential]	No detriment likely – limited aggregation, entrenched competition, and low entry and expansion barriers
Retail market for leased line Internet access services in Singapore	[Confidential]	[Confidential]	No detriment likely – limited service overlap, entrenched competition, and low expansion barriers
Retail market for co-location services in Singapore	[Confidential]	[Confidential]	No detriment likely – limited aggregation, entrenched competition, and low entry and expansion barriers

43 ANC and C2C company data as at 31 December 2006. This number represents the customers to whom ANC and C2C's Singapore-based sales forces sold ANC and C2C's IPLC product as at the end of CY2006. It may include sales by those teams of that service to customers outside Singapore. It may also exclude sales of that service to customers inside Singapore by ANC and C2C sales staff based in other locations.

44 PacNet company data as at 31 December 2006.

45 IDA, *Explanatory Memorandum to the Decision of the IDA of Singapore on the Request by SingTel for Exemption from Dominant Licensee Obligations with respect to the "International Capacity Services" Market*, 12 April 2005, para 100-114.

Retail market for international IP Transit services in Singapore	**[Confidential]**	**[Confidential]**	No detriment likely – limited aggregation, entrenched competition, and low entry and expansion barriers
Retail market for IPLC services in Singapore	**[Confidential]**	**[Confidential]**	No detriment likely – limited aggregation, entrenched competition, and low entry and expansion barriers

6. VERTICAL EFFECTS

It may well be economically efficient for the vertically integrated businesses to charge different (lower) imputed prices to their own downstream operations compared with prices charged to third parties in the downstream markets, reflecting lower transaction costs and other possible efficiencies.

In and of itself, there is no *prima facie* reason to believe that such a pricing differential would have anti-competitive effects. Rather, it is possible that such pricing differentials could generate anti-competitive effects if the merged entity were unconstrained in terms of the price differential it could impose, and could exploit this so as to foreclose firms from downstream markets.

More precisely, it is appropriate to analyse whether the merged entity might have the ability and/or incentive to engage in the following types of anti-competitive conduct:

- Raising rivals' costs – it is necessary to analyse whether the consolidated firms would have the ability and incentive to raise the prices for international cable capacity for independent downstream ISPs to such a high level (or perhaps even withhold capacity) that downstream ISPs would be unable to compete with the vertically integrated consolidated firms; or
- Predation – it is necessary to analyse whether the vertically integrated firm would have the ability and incentive to set the retail price of downstream services – and hence, the imputed price of upstream prices for international cable capacity to its own downstream operations (PacNet) – at such a low (i.e. predatory) level as to foreclose downstream competitors, subsequent to which the vertically integrated firms would recoup the profit sacrifice caused by their predatory pricing.

6.1. RAISING RIVALS' COSTS

In respect of raising rivals' costs theory, we believe the consolidated firm's ability to drive a differential so high as to effect foreclosure of any downstream market would be strictly constrained by the availability to downstream competitors of alternative sources of supply of international capacity.

On international routes relevant to the proposed acquisition, there are numerous competitors supplying international cable capacity. These include cable owners, such as the APCN, APCN-2, i2i, SeaMeWe-2, SeaMeWe-3, SeaMeWe-4, TIC and Thailand-Indonesia-Singapore cables, and holders of significant IRUs.

Competitors to the merged entity each have excess cable capacity. Based on CRA's calculations, approximately 5 per cent of total design capacity of cables landing in Singapore is lit.[46] Direct competitors, SingTel and StarHub, together own or partly own (at least) 7 of the 10 submarine cable networks that land in Singapore (namely, APCN, APCN-2, i2i, SeaMeWe-2, SeaMeWe-3, SeaMeWe-4, and Thailand-Indonesia-Singapore). SingTel also partly owns 1 of the 2 cable networks (SAT-3/WASC/SAFE) that land in Malaysia and are connected to Singapore via terrestrial link. In addition, recent technological developments have made supply virtually unbounded in terms of capacity that can be laid and lit. Advances in optical technology mean that the present generation of cables has design capacities often exceeding 2,500 Gbps.[47]

The cable owners, as a result of having very substantial excess capacity, clearly have the ability to accommodate the requirements of independent downstream competitors.

Cable capacity is a homogenous good and switching costs are low (at least for buyers of short term leases).

ISPs and other downstream competitors, as acquirers of upstream services, therefore have a credible substitute to turn to, if the consolidated firm were to seek to raise its international cable charges.

Even if, for completeness of analysis, we assume the vertically integrated firm had the ability to increase prices charged to downstream ISPs and/or withhold capacity, there would appear to be few incentives for it to do so and strong economic constraints against it so acting. Most notably, there is excess international cable capacity on relevant cables. Hence, suppliers of international cable capacity, who face largely fixed costs, would be expected to have strong incentives to expand sales rather than withhold capacity (and/or increase prices), in order to recover the (largely fixed) costs associated with ownership of their systems or securing IRUs.

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46 CRA, *Economic analysis of competitive effects resulting from proposed common ownership of C2C and ANC – Singapore*, 7 July 2006.

47 Technological progress means that an increasing number of wavelengths can be multiplexed into a fibre, thereby increasing its maximum upgradeable capacity.

The fact that, for the reason indicated in the previous paragraph, margins (over variable costs) tend to be higher on cable sales than on sales of downstream services strengthens this point. In effect, in these circumstances a cable firm that sacrificed upstream sales (by refusing to supply cable capacity to downstream rivals) for the sake of expanding its downstream position would be acting irrationally, as it would forego high margin sales for the sake of increased sales in a low margin market. As a result, even if the consolidated entity were in a position to undertake such a strategy (and it would not be), it would have no incentive to implement it.

6.2. Predation

We believe that a vertical (predatory) foreclosure strategy – assuming that it could in fact be implemented in practice – seems highly implausible, for two reasons.

First, the strategy would entail a profit sacrifice – likely to be substantial – on the part of the consolidated firms, throughout the period of pricing at sub-competitive levels and until downstream rivals are driven from the market.

Second, for such a strategy to be economically rational, the consolidated firms must be able to successfully exclude downstream competitors from the market and, subsequent to this, recoup the incurred profit sacrifice.

To begin with, the likelihood of successful exclusion would seem extremely low, particularly given the size and broader scale of operations of the numerous competitors to the parties supplying products in downstream markets. Even if it is assumed that the merged firm could successfully exclude or marginalise rivals in downstream markets (which seems improbable) the likelihood of recoupment is low.

In particular, it is reasonable to assume that any attempt at exclusion would incur significant costs, due to the necessity for an extended period of below-cost pricing. Successful recoupment would therefore likely require a substantial and sustained increase in the market price, subsequent to successful exclusion.

Although the downstream markets at issue might not be perfectly contestable, the magnitude and duration of price rises required to achieve recoupment would likely be defeated by *de novo* entry and expansion, or re-entry and expansion by excluded firms. Recognising this, it is most unlikely that any vertically integrated firms in the market, including ANC/PacNet, would seek to engage in such a strategy.

7. EFFECTS ASSOCIATED WITH IMPOSING CONDITIONS ON THE PROPOSED ACQUISITION

The proposed consolidation can be expected to give rise to pro-competitive benefits subsequent to the merged firm achieving contemplated vertical and other efficiencies. Moreover, the proposed consolidation is unlikely to give rise to any significant competitive detriments. As a result, any contemplated conditions could only likely have negative effects, in terms of reducing or even eliminating potential for pro-competitive benefits.

Specifically, any contemplated requirement for the upstream enterprise within ANC/PacNet to offer international cable capacity on non-discriminatory price terms and conditions to third parties would potentially undermine the normal incentives for the merged entity to achieve and to pass through potential efficiencies associated with the proposed transaction (that would, in turn, enhance consumer welfare and increase competition).

Simply put, if internal vertical efficiencies make it possible for ANC to supply international capacity to PacNet at a lower price than it is able to supply third parties, then it should be free to do so, in order that PacNet can pass those efficiencies on to end-users in the form of price savings. But if ANC were required, for example, not to discriminate among acquirers of the upstream input, then the vertical efficiencies could not be passed through to end-users. In that event, not only would PacNet's customers not realise the benefit of the relevant efficiencies, but the efficiencies within other vertically integrated suppliers would not be fully and as rapidly unlocked for the benefit of other customers (as described in sections 3.3 and 4 above).[48]

8. CONCLUSIONS

CRA has been engaged to provide expert economic advice on the likely competitive effects of the proposed acquisition of PacNet by Connect.

In summarising our views, we have been asked to consider the following criteria:

1. *The structure of the market (and the extent to which it facilitates unilateral anti-competitive conduct or concerted action by multiple participants); the likelihood that output would be increased (either by existing market participants or new entrants) in response to a significant and non-transitory price increase.*

48 IDA might contemplate alternative remedies to a non-discrimination condition. However, given that a non-discrimination remedy is likely to be at the lower end of the spectrum in terms of the regulatory intrusion and costs that such a remedy would entail, and (as just noted) given that even this relatively low cost remedy would likely only lead to harmful effects for society, it follows that any alternative, higher cost remedies would only exacerbate these harmful effects.

2. *The likelihood of End Users switching to a competing service provider in response to a significant and non-transitory price increase.*

3. *Any efficiency that would likely result from the Consolidation.*

With these criteria in mind, our views on the proposed transaction, as detailed above, are as presented below.

In relation to Criteria 1 and 2, the proposed transaction is unlikely to give rise to any horizontal competitive effects in circumstances where there would be aggregation of services, because of the number of established competitors supplying these services currently and/or due to low barriers to entry and expansion. In other words, the merged entity could not in fact raise prices or reduce output without inducing switching by consumers to competing service providers or inducing entry and expansion.

Moreover, we do not believe the proposed transaction will likely give rise to adverse vertical competitive effects i.e. an increased ability or incentive to engage in anti-competitive conduct arising from its enhanced vertical integration. As detailed above, this stems from the fact that the merged entity would have neither the ability nor the incentive to increase upstream prices or withhold capacity, due to the number of firms supplying international cable capacity, and the extent of excess capacity currently in the market, as well as the contestability of downstream markets.

In respect of Criterion 3, the proposed transaction will potentially give rise to vertical efficiencies, including in respect of transaction cost and common cost savings, leading to increased competition in relevant markets and enhanced consumer welfare.