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### 1 Introduction

### 1.1 Our Instructions

Arthur Andersen Corporate Finance Limited (AACF) has been engaged by the independent directors of Pacific Retail Group Limited (PRG) to assess the full offer made by Logan Corporation Limited (Logan) under the Takeovers Code. The appointment has been approved by the Takeovers Panel.

This report is required pursuant to the Takeovers Code. The provisions of the Code include a requirement placed on the target company (PRG) to release a statement, which must be accompanied by an independent adviser's report, or a summary of that report. Under Rule 21 of the Code, the independent adviser is required to prepare a report on the "merits" of the offer.

### 1.2 The Offer

On September 24 2001, Logan announced it would make a full takeover offer for all the ordinary fully paid shares, and options to acquire fully paid shares, in PRG not already held by it. The key terms of the offer are:

- \$1.76 in cash for each fully paid share in PRG;
- \$0.293 in cash for each PRG option that was issued on 24 December 1999 and is exercisable at \$1.467 per share on or before 24 December 2004;
- \$0.203 in cash for each PRG option that was issued on 13 March 2000 and is exercisable at \$1.557 per share on or before 13 March 2005;
- \$0.203 in cash for each PRG option that was issued on 22 March 2000 and is exercisable at \$1.557 per share on or before 22 March 2005;
- \$0.37 in cash for each PRG option that was issued on 20 July 2000 and is exercisable at \$1.39 per share on or before 20 July 2005.

The offer is dated 12 October 2001 and remains open until 10 November 2001, unless Logan extends the offer period subject to the provisions of the Takeovers Code.

### 1.3 Summary of Our Valuation

We have valued the shares in PRG using a discounted cash flow (DCF) approach. The valuation has been verified by comparing the implied earnings before interest and tax (EBIT) and price-earnings (PE) multiples of our mid-point valuation with those of multiples of similar companies. The DCF valuation starts by valuing the company's cash flows in their entirety, adjusts for net interest bearing liabilities, and then takes into account the illiquidity of the shares in PRG, and the "minority" nature of the shares that are subject to the offer.

We have valued the employee stock options using a well-known option pricing methodology (the Black-Scholes formula). This has been done concurrently with the valuation of the shares, as both classes of securities have claims on the cash flows of the firm.

Our analysis values the shares in PRG in the range of 2.13 ("low") to 2.95 ("high"). The mid-point of this range is 2.54, and this is the value that is the focus of our report. This is substantially in excess of the offer price of 1.76. At our assessed mid-range value of 2.54, the implied EBIT multiple is 6.06 times forecast earnings, and the implied PE multiple is 8.47 times forecast earnings after tax.

We have valued the options at \$1.073 (Dec 2004 expiry date), \$0.983 (March 2005 expiry dates) and \$1.15 (July 2005 expiry date). These values are also substantially greater than the offer prices.

Under Rule 21 of the Takeovers Code we are required to report on the merits of the offer. This is done in section 5 of this report. Our conclusion is that neither the offer for the ordinary shares nor the offer for the options is fair, but that the offers do provide an exit mechanism for the existing security holders at a price that is 21% greater than the pre-bid share price, and in circumstances where the market for PRG's shares is highly illiquid.

### 1.4 Disclaimer and Restrictions Upon Use

This report is issued subject to the statements set out in Appendix 1 regarding AACF's independence, general disclaimer of liability, indemnity, reliance on information, and the restrictions upon the use of this report.

### 2 Background

#### 2.1 Overview of PRG's Operations

PRG is a diversified company with interests in the retailing of appliances, computers and peripherals and smaller electronic items. The group has recently acquired the operations of Living and Giving, which specialises in the retailing of gifts and house-ware products. Annual gross revenues of the group of approximately \$400 million were achieved in the year ending 31 March 2001. These have increased from approximately \$256 million in the 1997 year.

PRG's principal areas of operation are summarised below:

2.1.1 Appliance Retailing

PRG sells white-ware and brown goods through Bond and Bond and Noel Leeming. Both chains sell most leading brands including Panasonic, Sony, Philips, Pioneer and Mitsubishi. A notable exclusion in the white-ware range is Fisher and Paykel, which is not willing to supply PRG with its products.

The major difference between Bond and Bond and Noel Leeming is that the Noel Leeming format is based around a larger sized store. Noel Leeming also focuses more on providing a wide range of appliances and computers whilst Bond and Bond is more specialised in electronic products, brown goods and computers. In addition, the Bond and Bond stores are usually found in malls or strip locations whereas Noel Leeming stores are increasingly standalone or destination stores. Bond and Bond is relocating to larger sites as existing leases expire.

New Zealand currently has substantially more appliance retailers per head of population than either Australia or the United States. There is an international trend towards large store destination formats, which may favour PRG.

It is estimated that PRG has market shares of about 20% for whiteware and in excess of 30% for brown goods. Growth in white-ware is partially constrained as long as Fisher and Paykel retains its exclusive dealer arrangements. Major national competitors are Harvey Norman, the Retravision, Betta and 100% store cooperatives, and Farmers. The Harvey Norman "proprietor" model is regarded as having been particularly successful, and PRG is trialling similar schemes in some of its stores. As well, there is competition from a number of local retailers (for example Hill and Stewart, Leader and Watt, Smiths City).

#### 2.1.2 Computer Retailing

Both Bond and Bond and Noel Leeming are involved in computer retailing to differing degrees. PRG currently operates Computer City as a stand-alone brand which is usually co-located in Noel Leeming stores. The number of exclusive large computer stores is likely to increase, providing an extensive range of computing hardware and software with a high level of customer service and technical expertise. The target market includes business customers as well as second time purchasers of computers. This is a market that will appeal to "sophisticated" computer users, rather than those who just want a computer package.

This strategic initiative is reflected in the opening of the first Big Byte store in Christchurch. A second store will be opened in Palmerston North at the end of October. The advertising material states that "everything is converging and so are we". Big Byte is deliberately targeting both home and business customers by providing a wide product choice, technical expertise, and ongoing support. Over time it is likely that the Computer City label will be replaced by Big Byte, while Noel Leeming will continue to sell computer packages and some accessories.

The companies that compete in the white-ware and brown goods segments also compete with PRG in this segment of the market, along with specialist stores like Dick Smith Electronics. The computer and computer accessory market is predicted to grow rapidly. It is estimated that PRG will hold in excess of 20% market share of the home computer hardware market, and about 15% of the combined home hardware, software and accessories market.

#### 2.1.3 Gift Retailing

In October 2000, PRG purchased the Living and Giving chain of six stores, which specialises in retailing house-ware products. These stores were initially located only in Auckland and Hamilton. Considerable growth is expected from this acquisition with fifteen stores open by Christmas 2001.

A national chain will provide strong buying opportunities for Living and Giving. This is a different style of retailing from the other parts of PRG. With Living and Giving the average sale size is small, the mark-up is high, and the sales are likely to be highly seasonal, with a large Christmas peak. Whether a national ownership structure for such stores is the optimal governance structure is an open question. The majority of competitors are privately owned.

#### 2.1.4 Finance Activities

PRG also owns a finance division consisting of Pacific Retail Services Limited (PRS) and Pacific Retail Finance Limited (PRF). The large majority of hire purchase paper that is generated by the PRG retailers is sold through the finance division to an independent company, Waratah Receivables Corporation N.Z. Limited (Waratah). The remaining paper, which is not subject to the securitisation programme, is purchased by PRF, which also holds the revolving credit portfolio. PRF is also able to discount the hire purchase paper of other retailers. PRF is now attempting to finance growth through a public issue of debenture stock and unsecured deposits. The initial prospectus is dated 20 July 2001. The current rate card offers interest rates between 5% (call money) and 7% (18 months to three year deposits). Current plans involve substantial growth for PRF, developing it into a medium sized full service finance company, involved in both consumer and commercial finance activities. A major asset that will assist this development is PRS's customer information database.

PRS provides the deposit and investment management, marketing, and loan administration functions.

The securitisation process has enabled PRG's management to become more focussed on their core business of retailing. Some of the benefits of Waratah's access to money markets have been passed through to PRG. Loan administration remains the responsibility of PRS. This programme will continue to purchase the bulk of the "plain vanilla" hire purchase paper generated by PRG's retail activities. However the development of PRF should complement this, by enabling more special financing deals to be marketed in conjunction with appliance retailing.

#### 2.2 Major Events

The following is a brief summary of the key events leading to the formation of PRG in its current structure.

In 1991 Sir Roger Bhatnagar and Mr Greg Lancaster purchased the business operations of Noel Leeming from the Smiths City Limited's receivers. Bhatnagar merged the operations of Noel Leeming with his existing retailer at the time, Sound Plus. Thirty percent of the merged entity was floated on the New Zealand Stock Exchange in 1993. Its listing subsequently attracted an unsuccessful takeover bid launched by the Skellerup Group in 1994.

During 1995 the Asian investment group, Lion City Holdings Limited, acquired a 38.5% stake in Noel Leeming. In the following year Noel Leeming and the Bond and Bond retailing chain merged. Bond and Bond was at the time mainly owned by Murray International Holdings (NZ) Limited. After the merger between Bond and Bond and Noel Leeming the Pacific Retail Group was formed. The main shareholders in PRG were then Murray International Holdings (NZ) Limited with 37% and Lion City Holdings Limited with 21%.

In 1997 Lion City Holdings Limited sold its stake in PRG to Murray International Holdings (NZ) Limited. This transaction resulted in Murray International gaining effective control with a 58% shareholding. Murray International began restructuring activities in order to gain the anticipated synergies from the merger. In September 1998 all commercial functions were relocated from Christchurch to Auckland, placing the buying team in much closer contact with the major suppliers. Further emphasis was placed on repositioning the group's brands, flexible financing products, and training.

A takeover offer was made in January 1999 by Logan. The offer was for \$1.30 in cash for all shares of PRG. In February 1999 Foodlands Australia Limited, the owners of New Zealand's Farmers Deka chain, made a competing offer for \$1.60 per share, conditional on gaining a 90% shareholding. This bid was unsuccessful, and the offer by Logan was declared unconditional in March 1999, with Logan owning 71% of the issued capital of PRG.

Logan reduced its shareholding in July 1999 to 63% of the issued shares. At the same time Logan gave notice of a proposed restricted transfer in which it advised it may purchase up to 100% of all PRG shares at prices between \$1.30 and \$3.00. In September 2001 Logan offered to buy the remaining shares in the company that it did not already own for \$1.76, and that offer is the catalyst of this report.

We understand that a further 2.24m shares were purchased by Logan from Platinum Retail Limited on 8 October 2001, for \$1.76 per share.

### 2.3 PRG's Financial Performance and Financial Position

Recent past financial information relating to PRG is shown in Table 2-1 and Table 2-2 below. Sales have increased steadily, but the major feature has been the large increase in profitability in 2000 and 2001. Performance in earlier years was affected by the number of managerial changes at the top of the organisation. In the current year sales and profits (to August) are greater than for the equivalent period for 2001. They are in line with the forecasts that have been used in this report. At least some of the purported benefits of the merger of Noel Leeming and Bond and Bond have been finally realised. No cash dividends have been paid since November 1998, with profits being retained to finance growth opportunities.

### **Table 2-1: Summary Statement of Financial Performance**

|                               | Mar-98<br>Actual | Mar-99<br>Actual | Mar-00<br>Actual | Mar-01<br>Actual | Mar-02<br>Forecast |
|-------------------------------|------------------|------------------|------------------|------------------|--------------------|
| Gross Revenue                 | 308,360          | 340,092          | 359,975          | 402,229          | 422,226            |
| Growth %                      |                  | 10.29%           | 5.85%            | 11.74%           | 4.97%              |
| EBITDA                        | 13,543           | 13,241           | 17,998           | 22,289           | 27,026             |
| Amortisation                  | 770              | 763              | 8                | 237              | 466                |
| Depreciation                  | 4,677            | 5,550            | 6,153            | 6,796            | 7,828              |
| ЕВІТ                          | 8,096            | 6,928            | 11,837           | 15,256           | 18,732             |
| Net Interest Expense (Income) | (1,423)          | (2,212)          | (2,601)          | (3,065)          | (4,102)            |
| Profit Before Tax             | 9,519            | 9,140            | 14,438           | 18,321           | 22,834             |
| Tax                           | 3,003            | 2,796            | 4,469            | 6,575            | 7,634              |
| NPAT                          | 6,516            | 6,344            | 9,969            | 11,746           | 15,200             |
| Abnormal Expenses             | 1,019            | 7,153            | 2,270            | 1,385            |                    |
| NPAT after Abnormal Items     | 5,497            | (809)            | 7,699            | 10,361           | ;                  |
|                               |                  |                  |                  |                  |                    |

|  | Mar-98 | Mar-99 | Mar-00 | Mar-01 |
|--|--------|--------|--------|--------|
|  | Actual | Actual | Actual | Actual |
| Current Assets                         |        |        |        |        |
| Receivables and Prepayments            | 13,913 | 16,842 | 17,399 | 19,525 |
| Inventories                            | 36,168 | 39,433 | 44,193 | 43,864 |
| Current Portion of HP Receivables      | 3,435  | 4,245  | 2,592  | 4,091  |
| Other Current Assets                   | 19     | 21     | 21     | 24     |
|  | 53,535 | 60,541 | 64,205 | 67,504 |
| Current Liabilities                    |        |        |        |        |
| Bank                                   | 8,379  | 7,806  | 16,036 | 3,311  |
| Accounts payable                       | 33,299 | 42,411 | 41,459 | 47,260 |
| Current Portion of Borrowings          | 716    | 410    | 320    | 3,571  |
| Other Current Liabilities              | 7,308  | 5,126  | 6,138  | 9,984  |
|  | 49,702 | 55,753 | 63,953 | 64,126 |
| Working Capital                        | 3,833  | 4,788  | 252    | 3,378  |
| Non-current Liabilities                |        |        |        |        |
| Borrowings (Finance Lease Liabilities) | 366    | 253    | 301    | 527    |
| Non-current Assets                     |        |        |        | i      |
| Securitisation Investment              | 12,089 | 14,361 | 22,367 | 22,131 |
| Term Portion of HP Receivables         | 1,896  | 1,572  | 990    | 2,041  |
| Property, Plant and Equipment          | 15,703 | 16,101 | 18,990 | 21,874 |
| Intangibles                            |        |        |        | 3,180  |
| Goodwill                               | 6,421  | 60     | 52     | 208    |
| Other Non-current Assets               | 1,780  | 2,565  | 5,667  | 6,093  |
|  | 37,889 | 34,659 | 48,066 | 55,527 |
| Net Assets                             | 41,356 | 39,194 | 48,017 | 58,378 |
| ROE Pre Abnormal                       | 15.76% | 16.19% | 20.76% | 20.12% |
| ROE Post Abnormal                      | 13.29% | -2.06% | 16.03% | 17.75% |

#### **Table 2-2: Summary Statement of Financial Position**

Table 2-2 presents summary balance sheet information.<sup>1</sup> The large classifications are current assets and current liabilities, which net out to fairly small net working capital numbers. There have been very low levels of non-current liabilities. Over this period PRG has been a "pure" retailer, with very limited fixed assets, and limited ownership of receivables as a result of the securitisation programme. The large increase in Net Assets over the last two years is due to the "no dividend" policy.

<sup>&</sup>lt;sup>1</sup> All Tables are copied from integrated spreadsheets. As a consequence there will be some rounding differences.

### 2.4 Recent Share Price Information

The following figure summarises the performance of PRG's share price, and volumes of shares transacted, in the period from January 1999 to September 2001. Two share price lines are presented in Figure 2-1. The blue (lower) line represents the traded share prices for each trading day without adjustments for share splits, bonus issues, rights issues, dividends and share cancellations, whereas the green line (top) represents the share prices incorporating these adjustments. Immediately prior to the bid PRG's share price was \$1.45.

### Figure 2-1: Traded Share Price and Volume Information Jan 1999 - Oct 2001



PRG Price/Volume Jan 1999 - Sep 2001

As illustrated in Figure 2-1, the share price has traded in the range of \$1.18 (equivalent to \$1.06 after the bonus issue) to \$2.19 (equivalent to \$1.97). The bar chart in the figure, which summarises the number of shares transacted on each trading day, demonstrates that the number has decreased substantially over the period. This indicates that the liquidity of PRG has reduced and investors will now require a higher liquidity premium when considering making an investment in PRG. Later in the report we return to this issue. We provide a standard measure of liquidity (rolling thirteen week volume sold relative to volume outstanding), and compare the liquidity of PRG with a selection of other companies, and with the market.

In addition to the graphical representation of PRG's recent share price performance, we have also compared the return to PRG's shareholders with the return implied by NZSE 40 and Consumer<sup>2</sup> gross indexes. The results of our comparison are presented in Figure 2-2.

### Figure 2-2: PRG Return Comparison



### Return Comparison Jan 1999 - Oct 2001

As illustrated in the figure, an investment in PRG in January 1999 would have earned a 46% return over the 33 months investment horizon ended September 2001. This is significantly higher than the 3% return to investing in the NZSE-40 over the same period. However, in the same period, PRG has under-performed the consumer index, which yielded a 78.62% return.

### 2.5 Shareholding Summary

PRG has 50,479,714 shares on issue. This was increased from approximately 45 million by a 1 for 9 bonus issue in March 2000. Principal shareholdings taken from Computershare Registry Services Limited as at 18 October 2001 were as follows:

<sup>&</sup>lt;sup>2</sup> This is a value-weighted index of twelve companies (including PRG). The index is heavily influenced by The Warehouse Limited.

| Holder  | Number of Shares | Percentage |
|---|------------------|------------|
| LOGAN CORPORATION LIMITED                         | 34,294,305       | 67.94%     |
| THE NATIONAL MUTUAL LIFE ASSURANCE                | 4,176,217        | 8.27%      |
| NEW ZEALAND CENTRAL SECURITIES DEPOSITORY LIMITED | 2,122,733        | 4.20%      |
| PLATINUM RETAIL LIMITED                           | 2,098,518        | 4.15%      |
| NICHOLAS PETER GORDON & RICHARD ANTHONY JOHNSTON  | 1,666,666        | 3.30%      |
| AXA NEW ZEALAND NOMINEES LIMITED - A A/C          | 684,449          | 1.35%      |
| T.E.A. CUSTODIANS LIMITED                         | 525,222          | 1.04%      |
| RAJ INVESTMENTS LIMITED                           | 217,944          | 0.43%      |
| THE PUBLIC TRUSTEE                                | 208,889          | 0.41%      |
| GRANT HAROLD AITKEN                               | 191,100          | 0.37%      |
| ADAM KELLER                                       | 169,322          | 0.33%      |
| JAMES BRACKENRIDGE GORDON                         | 162,333          | 0.32%      |
| ZIBOR LIMITED                                     | 150,000          | 0.29%      |
| RICHARD WAYNE SWANEY                              | 139,000          | 0.27%      |
| NEIL ALISTAIR CAMPBELL                            | 124,196          | 0.25%      |
| CITIBANK NOMINEES (NEW ZEALAND) LIMITED           | 123,160          | 0.24%      |
| MIRROR LAKE INVESTMENT LTD                        | 112,222          | 0.22%      |
| STEFAN GARY PRESTON & LESLIE SUE PRESTON          | 111,388          | 0.22%      |
| GRACE HELEN GORDON                                | 76,216           | 0.15%      |
| PETER JAMES ROBERTS                               | 70,888           | 0.14%      |
| Subtotal of Largest 20 Shareholders               | 47,353,880       | 93.88%     |
| Other   | 3,125,834        | 6.12%      |
| Total   | 50,479,714       | 100.00%    |

#### Figure 2-1: Largest 20 Shareholders as at 18 October 2001

The largest shareholder, Logan Corporation Limited, owned approximately 63% of the company, prior to the announcement of the takeover offer. Since then, Logan has purchased an additional 4.9%, including a 4.4% stake from Platinum Retail Limited. The actual number of shares that Logan owns according to the offer document is 34,306,305.

In addition to its ordinary shares, PRG also has 1,389,444 options outstanding, which allow the purchase of PRG shares at three exercise prices. These options are all held by managers of PRG, and Table 2-1 summarises the numbers outstanding for the four different classes of options issued. The different classes of options have expiry dates in 2004 and 2005. As the March 2005 options expire within a few days of each other, because the exercise price is the same, and because the offer price for them is the same, for valuation purposes we treat them as a single class of options in the remainder of the report.

#### Table 2-1: PRG's Employee Stock Options

|   | No. of Options | Expiry Date | Exercise Price |
|---|----------------|-------------|----------------|
|   | 333,333        | 24-Dec-04   | \$1.467        |
|   | 222,222        | 13-Mar-05   | \$1.557        |
| ĺ | 438,889        | 22-Mar-05   | \$1.557        |
|   | 395,000        | 20-Jul-05   | \$1.390        |

### **3** Our Approach to the Valuation

#### 3.1 Generally Accepted Approaches

In general terms, it is recognised that the value of a share or interest in an entity represents the present value of the net cashflow expected from that share or interest. Cash flows can be in the form of either dividends and share sale proceeds or a residual sum derived from the liquidation of the business undertaking.

There are four principal methodologies commonly used for valuing a business, or shares in a trading enterprise:

- Discounted cashflow (DCF) analysis;
- Capitalisation of future maintainable earnings (CME);
- Net asset value (NAV) method; and
- A consideration of industry rules of thumb.

Each of these valuation methodologies has applications in different circumstances. These alternative approaches may be described as follows.

3.1.1 The Discounted Cashflow Method (DCF)

This method requires a formal business model and discounts free cashflow after excluding depreciation and allowing for expenditure on capital items and working capital requirements. As a prerequisite, it requires cash flow forecasts. It is particularly suitable where the future performance of a company is likely to be significantly different from its past performance or where cash flows are expected to fluctuate substantially over time, due to major capital expenditure or for other reasons.

Free cashflow is the surplus cash from operations after deducting operating expenses, income tax on operating earnings, movements in working capital, and capital expenditure. It represents the cash that is available to pay returns to providers of interest bearing debt and equity.

The main components of the DCF approach are:

- A detailed cash flow forecast, together with an estimate of the annual recurring cash flows (incorporating long term growth expectations) expected to be generated over the residual period beyond the forecast period; and
- An appropriate discount rate, typically represented by the weighted average cost of capital (WACC) required by the providers of debt and equity finance.

The DCF approach is generally preferred over competing methods of valuation as it (among other things) enables different estimates for each year during the forecast period to be adequately reflected in the overall valuation. However, its application is often undermined by the absence of reliable forecast cash flow data that allow the relationship between key value drivers and value to be accurately modelled. Furthermore, it is often the case that a substantial component of the value determined according to the DCF approach will be represented by the "forecast cash flow in perpetuity", which is highly sensitive to the projected operating performance of the business at the end of the forecast period. Practical difficulties in determining a reliable projection can introduce considerable uncertainty into the resulting value.

The DCF method initially yields a present value (PV) of expected future cash flows to represent the total value of the business enterprise. This is often referred to as the "enterprise value" (EV). Any other assets, the earnings of which are not reflected in the cash flow projections must be added to the enterprise value to determine an aggregate value. External interest bearing debt (net of any interest bearing investments) is subtracted to derive a value for the equity in the business.

#### 3.1.2 The Capitalisation of Earnings Method (CME)

This method can be thought of as a proxy for the DCF method. It requires an assessment of the maintainable earnings of the company, which is then capitalised by a market-derived multiple that reflects the inherent risk profile and growth prospects of the firm being valued. In certain cases it is possible to reconcile the CME multiples with the WACC (or the equity cost of capital) used in a DCF valuation, in which case the two methods amount to the same thing.

The CME approach is most frequently used when the historical earnings pattern of a company is sufficiently stable and predictive of the earnings that can be expected in the future, or where other factors such as available forecasts or other indicators of likely future results are considered sufficiently reliable to allow reasonable estimates of future earnings, including the growth pattern of earnings, to be made.

When applying a capitalisation of earnings method of valuation, we generally consider a capitalisation of earnings before interest and tax (EBIT) to be the most appropriate approach. The use of EBIT eliminates the effect of financial leverage, which is ultimately in the control of the directors or the acquirers. It also eliminates any distortions caused by the company's tax position.

The EBIT approach is sometimes modified to a EBITDA or EBITA approach by excluding depreciation and amortisation (DA) or amortisation (A) from assessed maintainable earnings and adjusting the multiple used accordingly. This is particularly appropriate when capital expenditure is expected to differ significantly from depreciation and amortisation over time. It also avoids the impact of different accounting policies between companies with respect to depreciation and amortisation when determining appropriate comparables to use.

As with the DCF method of valuation, capitalised earnings should be normalised. Earnings should not include non-recurring revenue items or items attributable to surplus assets not required in the business. Any "surplus" assets, or assets the income of which is not included in EBITA or EBITDA should be added to establish the final enterprise value. External interest bearing debt must be deducted to arrive at a value for owners' equity.

#### 3.1.3 The Net Asset Value Method (NAV)

This method requires an assessment of the realisable value of a company's assets and liabilities, together with the expenses and losses (including taxation) that would be incurred if a break up or liquidation of the company were being contemplated. An assessment of the profit required by a purchaser (in a break-up situation) is also needed.

This approach is generally used in situations when a business is not earning a profit, is in an establishment phase, has solvency problems, is to be wound up, or is the type of business which is typically sold on an asset basis (such as property investment companies). This approach can also be used to test the preferred valuation approach by providing an estimate of a minimum value for the company, especially where the shareholding to be valued is a controlling interest.

### 3.1.4 Industry Rules of Thumb

Within certain industries or for certain types of businesses, there may exist what are commonly known as "rules of thumb", or industry benchmarks, that can be used to assess the value of a particular business. For example, certain types of retail businesses are valued according to a multiple of turnover.

#### 3.1.5 Option Pricing Valuation

The different valuation approaches discussed above are usually employed to assess conventional equity and debt instruments. A form of option pricing model is required in the assessment of the value of the employee stock options.

The main determinants of option values are the value of the underlying asset, dividends paid during the life of the option, the length of the option period, the exercise price, risk free interest rates, and the volatility of share returns. There has been extensive research on option valuation that properly accounts for the relationships between value and the six key determinants of option value outlined. The most common approach used by analysts in valuing financial options is the Black-Scholes option pricing model. This model applies to traded options, so an additional allowance needs to be made for the lack of tradability of the employee options.

### 3.2 Our Approach to Valuing PRG

#### 3.2.1 Valuation of Fully Paid Ordinary Shares

Based on our analysis of PRG's financial information and the purpose of the valuation, we have adopted a DCF valuation, supported by an earnings multiplier approach.

The reason DCF is adopted as our primary approach is that, based on our understanding of the recent earnings projections provided by management, PRG is forecast to outperform the observed historical performance over the last two years. It is management's view that the earnings of PRG will grow over the next three years. As a result, a DCF analysis is required to fully capture this expectation and a valuation simply based on PRG's historical earnings or one year projected earnings using a multiple approach will not be adequate.

However, the multiple approach is still a useful approach in providing a crosscheck to our primary valuation method. We have benchmarked the various different earnings multiples (EBIT, EBITDA and PE) implied by our DCF analysis against PRG's comparables listed on both the New Zealand and Australian Stock Exchanges.

#### 3.2.2 Valuation of Stock Options

As discussed in section 3.1.5, it is not appropriate to adopt the approaches that are only useful in capturing the value of conventional debt or equity instruments (for example, DCF and earnings multiple approaches) to value financial derivatives such as the employee stock options issued by PRG. We have used a form of the Black-Scholes option pricing model to value PRG's stock options. A more detailed discussion on the Black-Scholes option pricing model is available in Appendix 4.

### 4 Valuation of PRG

### 4.1 Discounted Cashflow Analysis

We have undertaken the DCF valuation of PRG's ordinary shares based on the following key assumptions.

#### 4.1.1 The cash flow projections of PRG

The management of PRG has provided detailed forecast financial information for the remaining seven months of the current year, and more aggregated information for the following two financial years. The projected earnings are summarised as follows.

### Table 4-1: PRG's Earnings Projection \$000

|                     | Mar-02        | Mar-03        | Mar-04        |
|---------------------|---------------|---------------|---------------|
|                     | Forecast      | Forecast      | Forecast      |
| EBIT                | <b>18,732</b> | <b>19,893</b> | 22,469        |
| Net Interest Income | 4,102         | 9,841         | 13,565        |
| NPBT                | <b>22,834</b> | <b>29,734</b> | 36,034        |
| Tax                 | 7,634         | <u>9,911</u>  | <u>11,990</u> |
| NPAT                | <b>15,200</b> | <b>19,823</b> | <b>24,044</b> |
| EPS                 | \$0.30        | \$0.39        | \$0.48        |

EPS in Table 4-1 is based on the actual number of shares outstanding at the date of this report.

The EBIT of PRG is projected to increase from the current forecast \$18.7m to \$22.5m in 2004. These numbers are higher than the \$11.8m and \$15.3m of EBIT achieved by PRG over the last two financial years. The anticipated earnings growth is consistent with the view that PRG is now realising the benefits of the merger of the Noel Leeming and Bond and Bond stores undertaken in 1997, the increased stability in the top management team, the specific development of the Living and Giving and Big Byte brands, and new initiatives in distribution. As well, the group will share in the general anticipated growth in the computer and computer accessories business.

Table 4-1 shows substantial expected growth in interest income from the anticipated activities of PRF, as it grows into a full service retail finance company. This anticipated growth will require a capital injection to support the public borrowing that will be outstanding. Clearly the gains from this activity will not fully accrue to the existing share capital. Our valuation process addresses this by basing the analysis on EBIT, and then subtracting existing net interest bearing debt outstanding.<sup>3</sup>

The above earnings (before interest and tax) projections provided by management therefore form an integral part of our DCF valuation. Although we have not undertaken any formal due diligence of these forecasts, we regard them as reasonable.<sup>4</sup>

Based on the above earnings projection and our assumption that working capital will increase in line with the projected increases in EBIT, we have estimated the following enterprise free cashflow for the three years ended 31 March 2004.

|                                 | Mar-02<br>Forecast | Mar-03<br>Forecast | Mar-04<br>Forecast |
|---------------------------------|--------------------|--------------------|--------------------|
| EBIT                            | 18,732             | 19,893             | 22,469             |
| Growth                          |                    | 6.20%              | 12.95%             |
| + Depreciation and Amortisation | 8,294              | 8,485              | 8,682              |
| - Capex                         | 9,190              | 9,254              | 9,254              |
| - Increase in Working Capital   | 200                | 212                | 240                |
| - Tax                           | 6,237              | 6,565              | 7,415              |
| Enterprise Free Cash Flows      | 11,399             | 12,347             | 14,242             |

### Table 4-2: Projected Free Cashflow \$000

The March 2002 capital expenditure estimate has been provided by PRG. The estimates for 2003 and 2004 are at the upper end of PRG's projected ranges for those years. As observed in Table 4-2, consistent with the upward trend observed with EBIT, the enterprise free cash flows are projected to increase from \$11.4m to \$14.2m.

<sup>&</sup>lt;sup>3</sup> This is the net interest bearing debt outstanding at 31 August 2001.

<sup>&</sup>lt;sup>4</sup> Three analysts' forecasts for PRG for after tax earnings for the year ending 31 March 2002 are \$13.8m, \$13.9m and \$14.0m. The only analyst's forecast for the 2003 year is \$15.0m. All analysts' earnings forecasts are reported by DATEX. As trading in PRG's shares is "thin" analyst coverage is very restricted.

#### 4.1.2 Terminal Growth Rate Assumptions

The above earnings projections assume that revenues will increase by approximately 5% per annum. For the purposes of estimating terminal values in the DCF valuation, we assume growth rates of between 2.0% and 3.5%. These are nominal growth rates, so the lower estimate is assuming (approximately) no real growth and the upper estimate is assuming real growth of about 1.5% p.a., based on anticipated inflation of 2% p.a.<sup>5</sup> Growth of this magnitude is not unreasonable in our view as:

- PRG is the largest retailer of white-ware and brown goods, and although these markets are competitive, PRG has an advantage of economies of scale;
- The difficulties that PRG has confronted in merging the Noel Leeming activities with Bond and Bond have been largely resolved;
- The PC market, which is also very competitive, will continue to grow, and Big Byte, Noel Leeming and Bond and Bond will share in that growth;
- Further revenue growth can be expected as a result of synergies arising from the growth in the activities of the finance group (for example being able to market "special" financing deals); and
- PRG has some unused borrowing capacity that can facilitate growth.

#### 4.1.3 Estimation of PRG's Cost of Capital

A DCF valuation also requires an estimate of the weighted average cost of capital (WACC), that is the weighted average of the cost of interest bearing debt and equity. Full details of AACF's methodology and the detailed derivation of PRG's WACC are available in Appendix 3.

A summary of the key assumptions and our calculation of PRG's cost of capital is presented as follows.

<sup>&</sup>lt;sup>5</sup> The Reserve Bank of New Zealand Monetary Policy Statement, August 2001, shows recent historical inflation rates at 2.5% to 3%, but with anticipated inflation measures converging to 1.5%.

| Key Assumptions     |  |                | Range of Rates Adopted |
|---------------------|--|----------------|------------------------|
| Risk free Rate - 10 | yr Government Bond   | R <sub>f</sub> | 6.50%                  |
| Company Tax Rate    |  | T <sub>c</sub> | 33%                    |
| Equity Beta         |  | βe             | 0.84 to 1.00           |
| Target Gearing (De  | ebt/Enterprise Value)                                      | D/V            | 5% to 10%              |
| Market Risk Premi   | um   | MRP            | 8%                     |
| Weighted Average    | Tax Factor Assumed in Lally's Model                        | T,             | 25% to 33%             |
| Dividend Yield      |  | $D_{j}$        | 0%                     |
| Cost Capital Calc   | ulation  |                |                        |
| Cost of Equity      | $R_{e} = R_{f}(1-T_{i})+D_{j}T_{j}+\beta_{e}(MRP)$         |                | 11.1% to 12.9%         |
| Cost of Debt        | R₀   |                | 10%                    |
| WACC                | =R <sub>e</sub> *E/V+R <sub>d</sub> (1-T <sub>c</sub> )D/V |                | 10.6% to 12.6%         |

#### Table 4-1: PRG's WACC Calculation

As illustrated in Table 4-1, based on the various assumptions adopted in our cost of capital calculation, we have estimated PRG's WACC in the range of 10.6% to 12.6%.

We have also estimated PRG's cost of capital using an "implied" cost of capital approach, which estimates PRG's cost of capital by solving for the internal rate of return using analysts' consensus earnings forecasts and the current share price of PRG. The methodology and actual calculation of the implied cost of capital approach is also detailed in Appendix 3.

The implied method is the most direct way of reflecting the market's assessment of PRG's cost of capital. This approach therefore provides a useful crosscheck for the cost of capital calculated using capital asset pricing model (CAPM), which is the model used in Table 4-1.

Based on this approach, with a range of different share price assumptions, we have estimated PRG's cost of equity capital in the range of 10.15% to 11.23% which implies a similar range for WACC as is observed in Table 4-1, 10.6% to 12.6%. Accordingly, we have adopted this (latter) range to discount the enterprise free cashflow when estimating the value of PRG.

#### 4.1.4 Valuation of Interest Bearing Assets and Liabilities

The DCF valuation undertaken is based on enterprise free cashflow net of all interest expenses and interest income. That is, the valuation is done on an un-geared basis. We therefore still need to include assets that give rise to interest income, and subtract liabilities on which interest is paid.

#### Interest Bearing Assets

There are four main interest bearing assets in PRG's balance sheet:

- The subordinated debt investment in the HP securitisation programme;
- Hire purchase receivables that are not subject to the securitisation programme and hence are still held by Pacific Retail Finance Limited;
- Hire purchase receivables from end of period sales that have not been sold to Waratah at balance date; and
- Other investments, as shown in Note 12 of the March 2001 Annual Report.<sup>6</sup>

The investment in the securitisation programme at 31 March 2001 was \$22.1m, and at 31 August it was \$24.2m. This investment has been earning an interest rate of 2% above the bank bill rate, although this rate has recently been adjusted upwards as part of a renegotiation of the securitisation contract. At most it is worth face value. However if it is argued that 200 points in excess of the bank bill rate does not fully compensate for the risk associated with this subordinated investment, it would be worth less than face value. We consider that 200 points does not fully reflect the risk associated with this investment, and consider that a more appropriate rate is 500 points above the bank bill rate. This places a value on the investment of approximately 70% of its "face value".

Hire purchase receivables are valued at the value shown in the accounting system (that is, less unearned income and a provision for doubtful debts). Other investments are also valued at face value.

### Interest Bearing Liabilities

The only interest bearing liabilities that need to be accounted for in calculating an "equity" value are:

- The debt that has arisen from Pacific Retail Finance Limited's public issue. The prospectus for this issue is dated 21 July 2001, and an amount of approximately \$1.5m had been raised by 31 August, with an average interest rate of 6.78%;
- Items corresponding to Note 17 ("Borrowings") in the 2001 Annual Report. They are the Bison Holdings Promissory Note (paid 1 October 2001), motor vehicle finance lease liabilities (with interest rates varying between 5.6% and 15.5%), and a loan from Zibor Limited and Cygnus Limited jointly at 8.5%.

<sup>&</sup>lt;sup>6</sup> At 31 March 2001 these were an unsecured loan to Zibor Limited, and unsecured loan to senior executives in Pacific Retail Group, an unsecured join loan to Zibor Limited and Cygnus Limited, and shares in Wilson Neill Limited. The first item has been repaid since balance date, and the last item has been sold.

#### 4.1.5 Discount for Lack of Liquidity and Minority Shareholding

Before we proceed to report the results of our DCF analysis, it is important to highlight the fact that the DCF value of PRG is a value of the company without considering some important capital market "imperfections" such as lack of liquidity and discount for a minority shareholding.

The DCF analysis first values PRG based on the implicit assumptions that:

- The shares of the company are frequently traded which implies that there is a reasonable level of liquidity; and
- There are no agency problems between minority shareholders and majority shareholders with the consequence that there is no need to ascribe a discount for minority shareholding.

The valuation procedure adopted values the company "as a whole", whereas the value that is required is a value for the shares, and the value of the shares will depend upon the rights that accrue to those shares. This means that the liquidity associated with the shares needs to be assessed, and some allowance must be made for the fact that the non-Logan shareholders are minority holders.

In Figure 4-1 we have compared the liquidity of PRG with other comparable New Zealand listed companies for the period between January 2000 to October 2001. The liquidity is measured by a 13 weekly rolling average of the number of ordinary shares traded each week, relative to the total ordinary shares on issue.

#### Figure 4-1: Liquidity Comparison



As illustrated in Figure 4-1, the liquidity of PRG, represented by the orange line, is relatively low compared to most of its New Zealand comparables, and has declined over time. It is only marginally better than Arthur Barnett (a materially smaller company), represented by the dark blue line. As a general rule, index funds that include a liquidity criterion in assessing which companies are candidates for the benchmark index use weekly cut-off rates in the range of 0.15% to 0.20%, so PRG's liquidity is low. This implies that a "discount" for lack of liquidity is required to induce prospective investors to purchase shares in PRG.

In any event, minority shareholdings are normally valued by incorporating a discount for lack of control. Based on recent empirical research on discounts for lack of liquidity and control, together with our professional judgement, we have assumed a 30% discount when estimating the value of the minority shareholdings<sup>7</sup>.

### 4.1.6 DCF Valuation Summary

The following table summarises the results of our DCF analysis.

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<sup>&</sup>lt;sup>7</sup> For more details on the US empirical evidence on liquidity discount, see M Bajaj, D. T. Denis, S. P. Ferris and A. Sarin, Firm Value and Marketability Discount, Working Paper, February 2001.

### Table 4-1: DCF Valuation Summary \$000

|  | Mar-02  | Mar-03 | Mar-04  |
|--|---------|--------|---------|
| Panel A "low"  |         |        |         |
| Free Cash Flows  | 11,399  | 12,347 | 14,242  |
| Terminal Value   |         |        | 145,422 |
| Enterprise Value of PRG                                | 133,524 |        |         |
| + Additional Interest Bearing Assets                   | 27,281  |        |         |
| - Interest Bearing Debt                                | 5,671   |        |         |
| Equity Value of PRG                                    | 155,134 |        |         |
| Value after Discount for Lack of Liquidity and Control | 108,594 |        |         |
| Panel B "high"   | 2       |        |         |
| Free Cash Flows  | 11,399  | 12,347 | 14,242  |
| Terminal Value   |         |        | 218,336 |
| Enterprise Value of PRG                                | 193,909 |        |         |
| + Additional Interest Bearing Assets                   | 27,281  |        |         |
| - Interest Bearing Debt                                | 5,671   |        |         |
| Equity Value of PRG                                    | 215,519 |        | i       |
| Value after Discount for Lack of Liquidity and Control | 150,863 |        |         |

Table 4-1 provides the range of DCF enterprise values and equity values, based on the assumptions regarding cashflow, terminal growth and discount rates discussed in the previous sections. Panel A is the "low" scenario (WACC=12.6%, growth = 2%), and Panel B is the "high" scenario (WACC=10.6%, growth = 3.5%).

However, as discussed in Section 4.1.5, given the illiquid nature and lack of control for the minority shareholding, the equity value estimated by DCF is not the same as the value of the shares when these additional factors are included. The final line in each panel of Table 4-1 gives the "Value After Discount for Lack of Liquidity and Control". This is the "Equity Value", less the 30% discount referred to above.

We have therefore valued PRG's equity in the range of \$108.6m to \$150.9m. However, this equity value accrues to shareholders and to the option holders, as the employee stock options require the issue of additional shares if the options are exercised. This feature means that the value of the two securities cannot be independently determined, and an "iterative" procedure is required to place values on the options and the shares.

The results of our analysis are summarised in Table 4-2.

| Aggregate Equity Value \$000                | Low<br>108,594 | High<br>150,863 |
|---|----------------|-----------------|
| Less Value of Employee Stock Options \$000  |                |                 |
| December 2004 Options                       | 231            | 412             |
| March 2005 Options                          | 442            | 796             |
| July 2005 Options                           |                | 516             |
|   | 972            | 1,725           |
| Equity Value to Minority Shareholders \$000 | 107,622        | 149,139         |
|   |                |                 |
| Implied Share Price \$                      | 2.13           | 2.95            |

### **Table 4-2: Implied Share Price to Minority Shareholders**

As illustrated in the table, we have valued the ordinary shares of PRG in the range of \$2.13 ("low") to \$2.95 ("high"). The mid-point is \$2.54. The options are valued in the range of \$0.972m to \$1.725m. Option valuation details are given in Section 4.3.

#### 4.2 Earnings Multiple Valuation - A Crosscheck For DCF

In addition to the DCF analysis undertaken in the previous section to assess the value of PRG, we have also undertaken a comparison of the various earnings multiples implied by the DCF value of PRG with the traded earnings multiples observed from PRG's New Zealand and Australian comparables.

#### 4.2.1 Implied Earnings Multiple

The table below calculates the various different definitions of earnings multiples using the value calculated in Table 4-2.

|                   | Low  | High |
|-------------------|------|------|
| Mar 2002 Earnings |      |      |
| EBITDA Multiple   | 3.46 | 5.02 |
| EBIT Multiple     | 4.95 | 7.18 |
| PE Multiple       | 7.09 | 9.85 |
| Mar 2003 Earnings |      |      |
| EBITDA Multiple   | 3.29 | 4.78 |
| EBIT Multiple     | 4.66 | 6.77 |
| PE Multiple       | 5.45 | 7.57 |
| Mar 2004 Earnings |      |      |
| EBITDA Multiple   | 3.00 | 4.36 |
| EBIT Multiple     | 4.13 | 6.00 |
| PE Multiple       | 4.50 | 6.25 |

#### Table 4-1: Implied Earnings Multiple Summary

Using March 2002 earnings estimates, mid-point multiples of 4.24 for EBITDA, 6.06 for EBIT and 8.47 for PE are derived. These multiples are compared with the following earnings multiples selected from information available on comparable companies that are listed on New Zealand and Australian capital markets.

| Tahle  | 4.2. | New   | <b>Zealand</b> | Comparables |
|--------|------|-------|----------------|-------------|
| I UNIC |      | 11011 | Louiding       | oomparasioo |

| Company                    | Market Cap NZD \$m | EBITDA X | EBIT X | PE    | Price to NTA |
|----------------------------|--------------------|----------|--------|-------|--------------|
| Kirkcaldie and Stains      | 22.60              | 7.46     | 8.45   | 11.12 | 3.08         |
| The Warehouse              | 1,775.02           | 11.91    | 18.06  | 29.22 | 9.52         |
| Hallenstein Glassons       | 150.80             | 6.57     | 8.87   | 13.35 | 4.50         |
| Fisher and Paykel          | 1,440.95           | 17.60    | 33.88  | 23.90 | 3.78         |
| Michael Hill International | 163.87             | 8.85     | 11.12  | 16.32 | 3.33         |
| Pacific Retail             | 73.19              | 2.22     | 3.21   | 5,98  | 1.33         |
| Renaissance                | 16.72              | 7.18     | 12.61  | 12.26 | 1.42         |
| Colonial Motor Company     | 76.59              | 7.05     | 8.38   | 15.28 | 1.06         |
| Smiths City Group          | 14.73              | 9.23     | 10.52  | 6.19  | 0.69         |
| Arthur Barnett             | 12.03              | 11.21    | 16.50  | 18.36 | 0.42         |
| Average                    |                    | 8.93     | 13.16  | 15.20 | 2.91         |
| Median                     |                    | 8.16     | 10.82  | 14.32 | 2.25         |
| Average (Excluding PRG)    |                    | 9.67     | 14.26  | 16.22 | 3.09         |
| Median (Excluding PRG)     |                    | 8.85     | 11.12  | 15.28 | 3.08         |

#### **Table 4-3: Australian Comparables**

| Company             | Market Cap AUD \$m | EBITDA X | EBIT X | PE    | Price to NTA |
|---------------------|--------------------|----------|--------|-------|--------------|
| Freedom Group       | 123.11             | 6.00     | 7.82   | 10.79 | 4.21         |
| Foodland Associated | 1,132.95           | 20.71    | 24.65  | 52.45 | 3.64         |
| Harvey Norman       | 3,512.71           | 17.10    | 19.82  | 31.57 | 6.39         |
| Strathfield Group   | 33.27              | 3.16     | 4.82   | 7.85  | 1.11         |
| Average             |                    | 11.74    | 14.28  | 25.67 | 3.84         |
| Median              |                    | 11.55    | 13.82  | 21.18 | 3.93         |

The detailed descriptions of each comparable's principal business activities are available in Appendix 5. It is clearly difficult to find appropriate comparables, but we have concentrated on retailing companies or companies that arguably have similar risk profiles to PRG.

Individual multiples will be affected to some extent by idiosyncratic aspects of the companies concerned, so the more meaningful comparison is with the averages or medians. In general, our implied multiples are less than the ranges shown in the tables above, which is what we would expect, simply because PRG's liquidity is less than the liquidity of these companies. The values in Table 4-2 are based on the last reported earnings, so they will be systematically higher than those based on projected earnings if it is assumed that earnings are expected to grow. If we adjust for this, an EBIT multiple (for the 2002 year) would be in the range of six to seven, which is close to the implied EBIT multiple (for 2002) in Table 4-6 (mid-point of 6.06) that has been derived from our DCF approach.

We are also aware of a report to PRG from a competent professional advisory firm in February 2001 which undertakes a "fair market value assessment" of businesses within the appliance group using an EBIT multiple of six. We regard this as strongly supportive of our implied multiple.

The implied PE multiple for the 2002 year is 8.47. This is relatively low compared with the PEs shown in Table 4-2, even after adjusting for growth and liquidity. Our strong preference however is to rely primarily on the DCF approach because it is conceptually superior, and because it introduces more structure into the analysis – that is it allows us to explicitly address issues of uncertainty about the cost of capital, future growth rates, and other variables that are important in determining a share value.

In summary, the observed traded multiples (particularly with regard to EBIT), and the internal transaction multiples, provide some independent verification of our mid-point price of \$2.54.

#### 4.3 Valuation of Stock Options

Our valuation of the employee stock options proceeds as follows. We first provide a valuation based on the offer price of \$1.76. This valuation is undertaken to compare our methodology with the Logan offer for the options, which is the intrinsic value of the options based on Logan's offer price of \$1.76. In other words, we hold the \$1.76 share price "constant" and compare our valuation methodology with the Logan offer. We then vary the share price, and value the options based on the high and low equity values calculated in Table 4-1.

4.3.1 Assumptions on the Valuation of PRG's Stock Options

The key assumptions of our assessment of PRG's employee stock options using the Black-Scholes option pricing model are as follows:

"Share" Price - The appraisal date is set at 31 August 2001. We have first assessed the value of the options using the offer price. We have then valued the options using the share prices derived from the range of equity values calculated in our DCF analysis;

- Exercise Prices The exercise prices are \$1.467, \$1.557 and \$1.39 for the three "classes"<sup>8</sup> of options, with expiry dates on 24 December 2004, 13 and 22 March 2005, and 20 July 2005 respectively;
- Risk-Free Rate of Interest Government Stock with a term to maturity that is consistent with that of the option to be valued provides a reasonable proxy for the risk free rate of interest. We have used 6% as an estimate for this. Final option values are not very sensitive to alternative measures of risk free rates. A higher estimate for the risk free rate would provide a slightly higher Black-Scholes value;
- Time to Maturity The options expire on the dates given above. Time is then calculated on a daily basis from 31 August 2001;
- Volatility This is generally the most difficult parameter to estimate. The model assumes that variation in share returns is known and will remain constant over the life of the option. The volatility adopted in our analysis is estimated by reference to the annualised standard deviation of returns from PRG's daily traded share prices. Based on daily traded prices for the last 60 to 252 days, we have estimated the annualised volatility of PRG's returns in the range of 28.07% to 31.94%. Our analysis uses 30%;
- Discount for lack of liquidity The Black-Scholes option pricing model adopted assumes that the options valued are frequently traded. This is certainly not the case for PRG's employee options. Based on our professional judgement and experience of undertaking employee stock option valuations, we have ascribed a 30% discount to the option estimated by the Black-Scholes option pricing model.

#### 4.3.2 Value of PRG's Stock Options

The first part of the option valuation is based on the offer price of \$1.76. This will enable us to compare our estimate of value with the Logan offer, which is also based on \$1.76. These valuations and comparisons are shown in the first two tables of this section. We then proceed in Table 4-3 and Table 4-4 to value the options based on our estimate of enterprise value.

<sup>&</sup>lt;sup>8</sup> As indicated earlier, we are treating the options that expire on 13 March and 22 March as a single "class" for valuation purposes.

#### Table 4-1: Value of Options at \$1.76 Offer Price

|   | Exercise |             | Offer  | Intrinsic |           | Discounted |
|---|----------|-------------|--------|-----------|-----------|------------|
| 1 | Price    | Expiry Date | Price  | Value     | B&S Value | B&S Value  |
|   | \$1,47   | Dec-04      | \$1.76 | \$0.29    | \$0.66    | \$0.47     |
|   | \$1.56   | Mar-05      | \$1.76 | \$0.20    | \$0.64    | \$0.45     |
|   | \$1.39   | Jul-05      | \$1.76 | \$0.37    | \$0.75    | \$0.53     |

### Table 4-2: Aggregate Value of Stock Options \$000

| Exercise<br>Price | Expiry Date | Options<br>Issued | Aggregate<br>Intrinsic<br>Value | Aggregate<br>B&S Value | Aggregate<br>Discounted<br>Value |
|-------------------|-------------|-------------------|---------------------------------|------------------------|----------------------------------|
| \$1,47            | Dec-04      | 333               | 98                              | 222                    | 155                              |
| \$1,56            | Mar-05      | 661               | 134                             | 422                    | 295                              |
| \$1.39            | Jul-05      | 395               | 146                             | 297                    | 208                              |
| Total             |             |                   | 378                             | 940                    | 658                              |

As illustrated in the final column (discounted B&S value) in Table 4-9, we have valued each December 2004 options at \$0.47, March 2005 options (two tranches) at \$0.45 and July 2005 options at \$0.53. We have also calculated the "intrinsic value" of the options, that is the difference between \$1.76 and the relevant exercise prices. The intrinsic values for the three different options are \$0.293, \$0.203 and \$0.370 respectively. These intrinsic values are equal to the Logan offer values.

Table 4-2 shows the aggregated values of the three classes of employee options.

The intrinsic values of the options are significantly lower than the values implied by the Black-Scholes option pricing model. However, the observed price differences are consistent with the characteristics of financial options. The intrinsic value treats the options as if they were exercised at the current offer price, \$1.76 per share, before they reach their expiry dates. Where options have vested, it is unlikely that the option holders would voluntarily exercise the options early even though they are "in the money" with respect to the current share price. While intrinsic value sets a lower bound on the option price, it does not accurately reflect the value of an option. If intrinsic value was an accurate assessment of value, then we would expect investors to ascribe no value to "at the money options" or "out of the money options", which is not what is observed in financial markets.

However the assessment of the value of the equity in PRG has required a valuation of both the shares and the options. We now proceed to value the options based on the equity valuation shown in Table 4-1.

As a result of our option pricing analysis and the range of our assessed values of PRG's ordinary shares issued, we have valued the three different "classes" of employee options in the two tables that follow.

#### Aggregate Exercise Options Aggregate Discounted Price Expiry Date Issued **B&S Value B&S Value** 333 330 \$1 47 Dec-04 231 \$1.56 Mar-05 661 631 442 \$1.39 Jul-05 395 428 300 1,389 Total 972

#### Table 4-3: Value of Options at \$2.13 Share Price \$000

#### Table 4-4: Value of Options at \$2.95 Share Price \$000

| Exercise<br>Price | Expiry Date | Options<br>Issued | Aggregate<br>B&S Value | Aggregate<br>Discounted<br>B&S Value |
|-------------------|-------------|-------------------|------------------------|--------------------------------------|
| \$1.47            | Dec-04      | 333               | 589                    | 412                                  |
| \$1.56            | Mar-05      | 661               | 1,137                  | 796                                  |
| \$1.39            | Jul-05      | 395               | 738                    | 516                                  |
| Total             |             |                   | 2,464                  | 1,725                                |

Table 4-3 presents the value of the options using the lower end of our assessed value of each ordinary share (\$2.13), whereas Table 4-12 presents the value using the high share price (\$2.95).

The discounted B&S value is greater than the intrinsic value (that is, share value less exercise price) at the lower price of \$2.13, but it is lower than the intrinsic value for the \$2.95 share price. This is because as the share price increases, the portion of the value of the option that is called "time value" is decreasing. In other words, it is becoming more and more likely that the options will be exercised.

In this situation, the easiest way to determine a final value for the options is to use the options' intrinsic value, as at a price of \$2.54 per share the intrinsic value is greater than the discounted Black-Scholes value. The resulting intrinsic values are (approximately) \$358,000 (Dec 2004), \$650,000 (March 2005), and \$454,000 (July 2005). The comparable Logan offer values are \$98,000, \$134,000, and \$146,000 respectively.

### 5 Appraisal of the Offer

#### 5.1 The Merits of the Offer

The Logan offer is a "full offer" under the provisions of the Takeovers Code. In this section we provide our appraisal of the merits of the offer.

We interpret "merits" to mean the strengths and limitations. The New Zealand Law Dictionary defines merits as "the substantial question at issue in an action or other proceeding".<sup>9</sup> The Shorter Oxford Dictionary defines merits in terms of "the intrinsic rights and wrongs of the matter".

<sup>&</sup>lt;sup>9</sup> G W Hinde and M S Hinde, New Zealand Law Dictionary, third edition, Butterworths, 1979, p. 195

The offer for the shares in Logan is at a premium of 21% when compared to the immediate pre-bid price. On announcement of the bid, the share price increased to (and in fact slightly above) the bid price. Clearly this gives shareholders an ability to exit at a price that is higher than the market price that was available prior to the bid.

The bid price is, however, below our estimate of the value of the shares. The market price pre-bid was obviously even further below this value. Our explanation of this is that there is a large information asymmetry between the information that is being used to set the price in the market, and the "information" (that is the set of assumptions and expectations of outcomes) that the management of PRG is using. This, combined with the very "thin" market for shares in PRG, explains PRG's low market value. Further, there is very little analyst coverage of PRG, simply because there is very limited demand for the shares. In summary, there is very limited depth on the bid side of the market for shares in PRG.

Logan now holds about 68% of the share capital. If a shareholder wishes to exit the choices are to sell on the market or accept Logan's bid, or to hold out in anticipation of a "higher" bid, perhaps from another bidder.

We are not aware of any other potential bids. Even if another bidder came forward with a higher offer, the bidder would need to convince Logan to sell. Logan is therefore in a strong position – it could (if it wished) go some way to matching the alternative bidder's offer, or if the bid was good enough, it could sell, and other shareholders would also benefit under the "full" takeover provisions of the Code.

#### 5.2 Compulsory Acquisition

Since the Logan offer is not expressed to be subject to a minimum level of acceptances, one possible scenario is for Logan to simply increase its stake in PRG from its current level. If Logan were to reach the position where it became the "dominant owner" of PRG (where it owned or controlled more than 90% of all voting rights in the company), the Takeovers Code sets out the basis on which it may compulsorily acquire, or be required by the relevant security holders to acquire, all outstanding securities (including the non-voting options).

In either case the consideration will be either:

- The offer price for that class of securities, if Logan receives acceptances of more than 50% in respect of that class; or
- Where acceptances are below 50%, at a fair and reasonable price which in certain circumstances may be determined by an independent expert.

#### 5.3 Our Conclusion

Our valuation of the shares is in the range of \$2.13 to \$2.95. The mid-point is \$2.54, after allowing for a discount for minority holdings and lack of liquidity of 30%. The mid-point valuation implies an EBIT multiple of six.

We regard this price as "fair", as it reflects the underlying assets of the company, but also allows for the lack of liquidity and "minority" nature of the shares that are currently held by shareholders other than Logan. In this context therefore we regard the Logan offer for the shares as unfair. This is however not to say that shareholders will benefit from a better offer than the one currently made by Logan.

Our valuation of the options is substantially in excess of the offer price. There are two reasons for this. First, we base our valuation on the share value derived from the DCF process which, as discussed in this section, is substantially higher than \$1.76. Therefore, if it were appropriate to value the options at their intrinsic value, we would derive a higher intrinsic value than that derived from the Logan offer price.

Second, we have based our valuation of the options on a pricing approach that takes into account the time remaining for the options and the underlying volatility of the shares. These options (in the absence of this offer) still have a substantial amount of time to run, as the final expiry dates are not until 2004 and 2005. It is the time to run which, in the normal course of events, makes these options valuable.

The Black-Scholes model is commonly used to value traded options but is also used extensively to value executive stock options and has been used by financial advisers who have been asked to opine on the "fairness" of executive share option plans in New Zealand, when these plans are presented to shareholders for approval. It is also the most common approach used when accounting for the effects of executive options on profits. We have used the Black-Scholes model to value the employee stock options outstanding, and we have discounted the Black-Scholes values by 30% to allow for the lack of marketability associated with the options.

An important implication of this approach is that even if we had concluded that the share offer was fair, we would not necessarily also conclude that an offer of intrinsic value for the options (that is, share price less exercise price) was also fair.

However a lower bound that needs to be applied to the discounted Black Scholes value is that it cannot be less than the intrinsic value. At a \$2.54 estimated share price, the intrinsic value is the relevant value, so we value the three classes of options at \$1.07 (Dec 2004), \$0.98 (March 2005) and \$1.15 (July 2005).

The result of our approach is valuations that are between 3.1 times and 4.8 times higher than the Logan offer. Our conclusion is that the Logan offer for the options is not fair.

### Appendix 1: Terms of Engagement

This appendix forms part of and should be read in conjunction with the report of Arthur Andersen Corporate Finance Limited (AACF) dated 18 October relating to the independent adviser's report in relation to the full takeover offer made by Logan Corporation Limited (Logan) to acquire a 100% shareholding of Pacific Retail Group Limited (PRG).

### Independence

At the date of our report, AACF does not have any interest in the outcome of the matters that are the subject of the report. The fee to be received for the preparation of the report is based on the time spent at normal professional rates plus out of pocket expenses.

There are no pecuniary or other interests of AACF, or its Directors, employees, consultants or affiliates that could be reasonably argued as affecting our ability to give an unbiased and independent opinion in relation to the report.

#### Qualifications

AACF is a specialist corporate finance advisory company affiliated to Andersen (collectively referred to as the "Firm"), an international accounting and consulting firm. The Firm provides a full range of professional services, including financial advice and has advised specifically on numerous corporate valuations in respect of many of New Zealand's largest corporations.

The executives of AACF who are primarily responsible for the preparation of this report are Duncan Wylie (LLB (Victoria)), a director of AACF and a partner of Andersen, David Emanuel (PhD, MCom (Auckland), FCA), a director of AACF, Char-Le Wang (MCom (Auckland)), a manager of AACF, and Alastair Hart (MMS (Waikato)), an analyst of AACF. They have been responsible for the preparation of appraisal reports, independent expert opinions and valuations of various companies in different industries. Alex Duncan (BA (Hons) (Victoria)), a director of AACF and a partner of Andersen, performed a quality assurance role.

#### Declaration

The opinions recorded in this report are expressed as at the date of this report, and reflect our assessment of the material factors based on the prevailing business and economic conditions existing at the date of this report. Such conditions may change, with potentially material effect on the opinions expressed herein.

AACF reserves the right, but not the obligation, to review all necessary calculations on which our opinion is based and, if we consider it necessary, to revise our opinion in the light of any information existing at the opinion date which becomes known to us after the date of this report.

AACF does not imply, and it should not be construed, that it has carried out any form of audit on the accounting or other records of PRG for the purposes of this report.

#### **Disclaimer and Limitation of Liability**

This report has been prepared by AACF with due care and diligence. However, except for those responsibilities which by law cannot be excluded, no responsibility arising in any way whatsoever for errors or omissions is assumed by AACF, its directors, employees, consultants or affiliates for the preparation of this report.

Pursuant to the terms agreed between AACF and the independent directors of PRG, PRG shall indemnify and hold harmless AACF, its directors, consultants, employees and affiliates, from and against any loss, damage, expense or liability that may result from any third party claims arising out of, or relating to, this report. PRG undertakes to reimburse AACF in connection with any such actionable claim, except where, and to the extent that, any such claim is determined to have resulted from negligence or wilful misconduct of AACF.

### **Use of This Report**

This report should not be made available to, or used by, any third party without our prior written consent in each specific instance.

### Appendix 2: Sources of Information

In respect of our valuation of PRG we have received and relied upon various items of information from the company including:

- 1. Annual Report for the years ending 31 March 1999, 2000, and 2001.
- 2. Pacific Retail Finance and Pacific Retail Services Business Plan for the period ending March 2003, dated September 2001.
- 3. Pacific Retail Group Appliance division financial forecasts for the years ending 31 March 2002, 2003 and 2004.
- 4. Pacific Retail Group Appliance division business plan.
- 5. Living and Giving financial forecasts to March 2002.
- 6. Latest available annual reports for comparable company study.
- 7. Reserve Bank of New Zealand Monetary Policy Statement August 2001.
- 8. Legal documentation with regard to PRG's securitisation programme.
- 9. Earnings forecasts from Datex.
- PricewaterhouseCoopers independent appraisal report dated 22 February 2001 on the Proposed Transfer of Computer City Stores to Orion Ventures Limited.
- 11. Grant Samuel independent appraisal report dated January 1999 on the Takeover Offer by Logan Corporation Limited for Pacific Retail Group Limited.
- 12. Grant Samuel independent appraisal report dated July 1999 on the Notice of Restricted Transfer in Relation to Shares in Pacific Retail Group Limited.
- 13. PRG registered prospectus for employee share option plan, December 1999.

### **Appendix 3: Assessment of Discount Rate**

#### Conventional Approach

The weighted average cost of capital (WACC) involves estimating the cost of capital (that is, the risk adjusted anticipated rates of return) of equity and debt (and any other "hybrid" sources of finance), and weighting those costs based on the market values of the various sources of finance. Assuming capital is either debt or equity, the firm's weighted average cost of capital (WACC) simply weights the risk-adjusted returns required by equity investors and debt financiers, where the weights are the respective proportions of equity and debt in the firm's capital structure. This is expressed algebraically as follows:

$$WACC = R_e \cdot \frac{E}{V} + R_d \cdot (l-t) \cdot \frac{D}{V}$$

where:

- $R_e = \text{Cost of equity};$
- $R_d$  = Cost of debt;
- E = Value of equity;
- D = Value of debt;
- V = Value of equity plus debt; and
- t = Corporate tax rate.

#### Recognition of Imputation Credit Regime

Some form of equilibrium asset pricing model is required for the estimation of  $R_e$ , the cost of equity. The most commonly used approach is the capital asset pricing model (CAPM). That model comes in various different forms, and the model used here is what is known as the Brennan-Lally model, or just the Lally model<sup>10</sup>. The full version of the model appears below:

$$R_{e} = R_{f}(1 - T_{I}) + D_{j}T_{j} + \beta_{e}[E(R_{m}) - D_{m}T_{m} - R_{f}(1 - T_{I})]$$

where:

 $T_I$  = weighted average over all investors of  $(t_i - t_{gi})/(1 - t_{gi})$ 

 $T_i$  = weighted average over all investors of  $(t^i_{di} - t_{gi})/(1 - t_{gi})$ 

 $T_m$  = market portfolio counterpart to  $T_i$ 

<sup>&</sup>lt;sup>10</sup> M. Lally, 1992, The CAPM under dividend imputation, Pacific Accounting Review, V. 4, P.31-P.44.

 $D_j =$ cash dividend for company j

 $D_m = \text{cash dividend yield on the market portfolio}$ 

 $t_{di}^{i}$ ,  $t_{i}$ , and  $t_{gi}$  indicate taxes on dividends, interest, and capital gains respectively, where i designates an investor, and j a company.

Differential tax on capital gains relative to interest is reflected in  $T_I$ , and differential tax on dividends to capital gains is reflected in  $T_j$  and  $T_m$ . These depend upon the weighted average of investors' utilisation rates of imputation credits, and the amount of dividends.

The CAPM provides an accepted basis for estimating the cost of a company's equity capital. The model assumes that cost of equity is represented by the aggregate of the company's risk free rate of return, plus a premium to recognise market risk associated with the investment opportunity.

The following points have been identified by academics and practitioners as problematic with the use of the CAPM:

- The model is ex-ante while estimations of input parameters necessarily involve the modelling of ex-post data;
- The practical estimation of some variables, especially the market risk premium and equity beta, is subject to uncertainty; and
- There is considerable debate as to how to treat market imperfections within the CAPM model.

Notwithstanding the difficulties noted above, many empirical tests of the CAPM support the model's main implications. The systematic measure of risk, being the beta coefficient, does appear to be related to past returns; a positive risk/return trade off does exist; and this risk/return relationship appears to be linear. While some progress has been made in the development of alternative asset pricing models, none has yet proved to be superior to the CAPM. Consequently, we rely primarily on the CAPM for the purposes of our analysis.

#### The Risk Free Rate of Return $(R_f)$

The risk free rate relied upon should be an estimate of the risk free rate in each future period, that is the one year spot rate in that year. There is no official risk free rate. As a consequence, interest rates on long(ish) term Government securities are typically used as an acceptable proxy. More importantly, forecast rates for each future period are not readily available. In this case we have used the yield to maturity on a ten year government bond as an estimate of the risk free rate. That estimate is 6.5%.

The Tax Rate  $(T_l)$ 

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This rate is the difference between a tax rate on interest and a tax rate on capital gains, grossed up by one minus the capital gains tax rate. We have used estimates of 25% (minimum) and 33% (maximum). This is within the range commonly used elsewhere.

### Market Risk Premium $(E(R_m) - D_m T_m - R_f(1-T_l))$

The market risk premium represents the extra return that investors require in order to invest in "the market", proxied by equity securities listed on an exchange like the New Zealand Stock Exchange. It is an expected premium and, as such, is not an observable phenomenon. Frequently, the historic premium is used as a proxy measure.

Typically, market risk premiums used in the CAPM are based on empirical research of the extent to which long term average market returns exceed the risk free rate.

There are strong theoretical arguments that suggest that the market risk premium is not constant. Recent evidence from the US markets suggests that the market risk premium is "low", that is about 4% to 5%. In New Zealand the single most common measure used is 8%, and this is the number we adopt here.

#### The Beta Coefficient

The beta coefficient is a measure of the expected volatility of an investment relative to the market as a whole. The expected beta factor cannot be observed. Consequently, there is no "correct" beta.

It is normal practice to calculate an investment's historic beta from past data and use this as a proxy for future expectations. However, even measurement of historic betas may be subject to variation. For example, use of either daily, weekly or monthly observations of an equity's price movements relative to the market may change the resultant beta factor.

Measured beta factors are equity betas and reflect the financial leverage of the individual company or the relevant industrial sector. The debt/equity mix assumed in calculating the WACC capitalisation rate should be consistent with the debt/equity mix likely to apply to the beta during the measurement period. Typically, this changes over time and there will be some variation in the levels of leverage across companies in the same industry. It is possible to unlever beta factors to derive asset betas and re-lever betas to reflect a more appropriate or comparable financial structure, if necessary.

Our estimate of the beta coefficient uses what is known as the "Dimson"<sup>11</sup> method. This is a more appropriate estimation process when trading in the share is relatively thin. The Dimson estimation procedure uses multiple regression, and our process uses one leading market index factor, and one lagged term. The estimate is .84. However we also use the market average beta coefficient of 1.

#### Cost of Capital Calculation

In accordance to the above cost of capital methodology, and based on the various assumptions outlined above, the range of cost of capital calculated for PRG is summarised in the following table.

| Table / | A3.1: | AACF | Cost of | Capital | Calcu | lation |
|---------|-------|------|---------|---------|-------|--------|
|---------|-------|------|---------|---------|-------|--------|

| Key Assumptions          |  |                | Range of Rates Adopted |
|--------------------------|--|----------------|------------------------|
| Risk free Rate - 10 yr ( | Government Bond  | R <sub>f</sub> | 6.50%                  |
| Company Tax Rate         |  | Τ <sub>c</sub> | 33%                    |
| Equity Beta              |  | $\beta_{e}$    | 0.84 to 1.00           |
| Target Gearing (Debt/    | Enterprise Value)  | D/V            | 5% to 10%              |
| Market Risk Premium      | •  | MRP            | 8%                     |
| Weighted Average Tax     | k Factor Assumed in Lally's Model                          | $T_i$          | 25% to 33%             |
| Dividend Yield           |  | Dj             | 0%                     |
| Cost Capital Calculat    | tion   |                |                        |
| Cost of Equity           | $R_e = R_f(1-T_i)+D_jT_j+\beta_e(MRP)$                     |                | 11.1% to 12.9%         |
| Cost of Debt             | R <sub>d</sub>   |                | 10%                    |
| WACC                     | =R <sub>e</sub> *E/V+R <sub>d</sub> (1-T <sub>c</sub> )D/V |                | 10.6% to 12.6%         |

Accordingly, we have estimated PRG's WACC in the range of 10.6% to 12.6%.

### Implied Cost of Capital - A Crosscheck for CAPM

In addition to the conventional way of estimating the cost of equity capital based on CAPM, we have also assessed PRG's cost of equity capital using an implied cost of capital approach. This approach provides a useful crosscheck for the cost of capital calculation.

The implied cost of capital approach estimates the cost of equity capital using analysts' earnings forecasts and traded share prices. The rationale that underpins the model describes the cost of equity capital as the internal rate of return that ensures the present value of future forecast earnings equals the prevailing market price.

<sup>&</sup>lt;sup>11</sup> E Dimson, "Risk Measurement When Shares are Subject to Infrequent Trading", Journal of Financial Economics, Vol. 7, 1979, pp. 197 – 226.

We have adopted the implied cost of capital model developed by Gode and Mohanram that, based on the work done by Ohlson and Juettner, estimates the implied cost of capital in accordance with the following formulae<sup>12</sup>:

$$\mathbf{r}_{\mathbf{e}} = \mathbf{A} = \sqrt{\mathbf{A}^2 + \frac{\mathbf{eps}_1}{\mathbf{P}_0} \mathbf{x} \left(\frac{\Delta \mathbf{eps}_2}{\mathbf{eps}_1} - (\lambda - 1)\right)}$$

where:

$$A \equiv \frac{1}{2} \left( \lambda - 1 + \frac{dps_1}{P_0} \right)$$

 $eps_1$  = Current year forecast earnings per share

 $eps_2$  = Next year forecast earnings per share

 $P_0$  = Current share price

 $dps_1$  = Current year forecast dividends

 $\lambda$  = Expected terminal growth rate

Based on the above model, the average earnings forecasts of PRG provided by DATEX and PRG's recent traded share prices, we have estimated PRG's implied cost of equity capital in the range of 10.15% to 11.23%.

**Table A2: Implied Cost of Equity Capital** 

| Share Price \$ | Implied Cost of Capital |
|----------------|-------------------------|
| 1.40           | 11.23%                  |
| 1.50           | 10.92%                  |
| 1.60           | 10.64%                  |
| 1.70           | 10.38%                  |
| 1.80           | 10.15%                  |

<sup>&</sup>lt;sup>12</sup> D. Gode and P. Mohanran, Implied Cost of Capital, Working Paper, New York University, July 2001.

J. Ohlson and B. Juettner-Nauroth, Expected EPS and EPS Growth as Determinants of Value, Working Paper, New York University, September 2000.

## **Appendix 4: Black and Scholes Option Pricing Model**

The most commonly used method for valuing options is the Black-Scholes<sup>13</sup> option pricing model. Their model was originally developed to value "European" call and put options (that is options that can only be exercised on the expiry date).

A form of the Black-Scholes option pricing model which we have adopted to value PRG's employee stock options is more formally defined in the following formulae.

$$c = SN(d_1) - Xe^{-rT} N(d_2), \text{ where;}$$

$$d_1 = \frac{\ln(S/X) + (r + \sigma^2/2)T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

$$c = \text{Value of call option}$$

$$S = \text{Current market share price}$$

$$X = \text{Exercise price}$$

$$r = \text{Risk free rate}$$

$$T = \text{Time to maturity}$$

$$\sigma = \text{Volatility of underlying share (returns)}$$

$$e = \text{Exponential function}$$

$$\ln = \text{Natural logarithm}^{14}$$

The Black-Scholes model values a call option on a non-dividend paying stock exercisable only on the maturity date.

<sup>&</sup>lt;sup>13</sup> F Black and M Scholes, "The Pricing of Options and Corporate Liabilities", Journal of Political Economy, Vol 81, 1973, pp. 637 – 659.

<sup>&</sup>lt;sup>14</sup> J C Hull, Options, Futures and Other Derivatives, Fourth Edition, 2000, (Prentice Hall)

Like all theoretical models, the Black-Scholes model is based on a series of assumptions. These deal with the "pattern" of returns, the absence of transaction costs, and the ability of investors to short-sell shares, and to borrow and lend at the risk free rate. These assumptions are similar in structure to those used in the capital asset pricing model.

There have been a large number of tests of the correspondence between Black-Scholes valuations and the prices that are observed in traded securities markets. The general conclusion is that the Black-Scholes model is a fairly accurate estimator of prices actually found in options markets.<sup>15</sup>

More importantly, the Black-Scholes model has been used as a basis for the valuation of non-traded options including executive stock options. It is also a model that is recommended when accounting for executive stock options.

Call option values increase as the share price increases, as the exercise price decreases, as interest rates increase, as volatility increases, and the longer the period to exercise, other things being equal. The share price that enters the Black-Scholes formula is the actual share price, less the present value of dividends expected to be paid during the option period, if option-holders are not dividend-protected.

<sup>&</sup>lt;sup>15</sup> M Grinblatt and S Titman, Financial Markets and Corporate Strategy, McGraw Hill 1998, p. 308.

# Appendix 5: Comparable Companies' Principal Business Activities

### **New Zealand Comparables**

Kirkcaldie and Stains Limited is a Wellington based retailer providing a broad range of high quality merchandise from its cornerstone store in Lambton Quay. The company was recently listed on the NZSE main board after trading on the unlisted securities market.

The Warehouse Group Limited is New Zealand's largest listed retailer. The company recently expanded operations into Australia with the purchase of Crazy Clints and Silly Solly's retail outlets. The company was founded by Stephen Tindall in the early 1980s.

Hallenstein Glassons Limited is a New Zealand listed apparel retailer with the majority of its operations based in New Zealand and Australia. The majority of revenues come from the New Zealand retailing activities. The company operates the Hallensteins and Glassons brands.

Fisher and Paykel is a New Zealand listed appliance and health care product manufacturer. The company is currently undergoing a process whereby it plans to separate its appliance and healthcare businesses and gain NASDAQ listing for the healthcare business. The company also holds an equity stake in the Hill and Stewart retail chain.

Michael Hill International is a New Zealand listed jewellery retailer. The company operates Michael Hill Jeweller, an Australasian retail jewellery chain with over 100 stores in Australia and New Zealand.

Renaissance Group Limited is a New Zealand listed e-tailer. The company sells computer equipment over the internet and also owns a major stake in software company Conduit. The majority of revenue comes from the New Zealand based retailing activities.

Colonial Motor Company is a New Zealand listed motor vehicle retailer. The company owns dealerships which sell and service Ford and Mazda vehicles. Each dealership holds a franchise from the Ford Motor Company of New Zealand. The company also has various operations selling heavy duty trucks and tractors.

Smiths City Group shares trade on New Zealand's unlisted securities market. The company primarily operates appliance, flooring and furnishing retailers in the lower South Island. The company also provides hire purchase finance to Smiths City customers.

Arthur Barnett is listed on the NZSE. The company owns a retail shopping complex in Dunedin and also has retail operations in Dunedin and Christchurch.

#### **Australian Comparables**

Freedom Group Limited is an Australian listed furniture retailer. The company has operations in New Zealand and Australia. In addition to retailing furniture the company also designs its own furniture for sale in Freedom stores.

Foodland Associated Limited is an Australian listed retailer. The majority of company revenue is from its New Zealand operations including Progressive Enterprises, which owns Foodtown, Countdown and 3 Guys and Farmers Deka. The company also has supermarket and wholesale distribution activities in Western Australia.

Harvey Norman Limited is an Australian listed retailer specialising in household appliances and furniture. Operations are based in New Zealand and Australia. The company operates its own retail premises and also has franchise operations.

Strathfield Group Limited is an Australian listed retailer. The company is a leading supplier of mobile and portable electronics. All retailing activities are carried out in Australia.