Draft Implementation Guidance

ED 2 SHARE-BASED PAYMENT

Comments to be received by 7 March 2003

This draft Implementation Guidance accompanies the proposed International Financial Reporting Standard (IFRS) set out in ED 2 *Share-based Payment* (see separate booklet). Comments on the draft IFRS and its accompanying documents should be submitted in writing so as to be received by **7 March 2003**.

All replies will be put on the public record unless confidentiality is requested by the commentator. If commentators respond by fax or email, it would be helpful if they could also send a hard copy of their response by post. Comments should preferably be sent by email to: **CommentLetters@iasb.org.uk** or addressed to:

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INTERNATIONAL FINANCIAL REPORTING STANDARD
IFRS X Share-based Payment

[Draft] Implementation Guidance

This [draft] guidance is not part of the [draft] IFRS.

Measuring the fair value of equity instruments granted

Introduction

IG1 The [draft] IFRS requires an entity to measure the fair value of equity instruments granted, by reference to market prices if available, taking into account the terms and conditions upon which those equity instruments were granted.

IG2 The objective is to measure the price at which an equity instrument, with the same or substantially similar terms and conditions, could be sold to a knowledgeable, willing party in an arm's length transaction. Quoted market prices in active markets provide the best evidence of fair value and are to be used as the basis for measurement, if available. If quoted market prices are not available, the estimate of fair value is based on the best information available in the circumstances.

IG3 To estimate the fair value of a share option, in the absence of quoted market prices, the [draft] IFRS requires the entity to apply an option pricing model, such as the Black-Scholes model or a binomial model. The [draft] IFRS does not specify which model should be used. The entity should therefore decide which model is most appropriate to its circumstances.

IG4 Whichever option pricing model is applied, the [draft] IFRS requires that it shall take into account the exercise price of the option, the life of the option (expected life, if the option is non-transferable), the current price of the underlying shares, expected volatility of the share price, expected dividends on the shares (where appropriate), and the risk-free interest rate for the life of the option.

IG5 In estimating the expected volatility of and dividends on the underlying shares, the objective is to approximate the expectations that would be reflected in a current market or negotiated exchange price for the option.

Similarly, when estimating the expected lives of employee share options, the objective is to approximate the expectations that an outside party with access to detailed information about employees' exercise behaviour would develop based on information available at the grant date.

IG6 Often, there is likely to be a range of reasonable expectations about future volatility, dividends and option life. If so, an expected value should be calculated, by weighting each amount within the range by its associated probability of occurrence.

IG7 Expectations about the future are generally based on past experience, modified if the future is reasonably expected to differ from the past. In some circumstances, identifiable factors may indicate that unadjusted historical experience is a relatively poor predictor of future experience. For example, if an entity with two distinctly different lines of business disposes of the one that was significantly less risky than the other, historical volatility may not be the best information on which to base reasonable expectations for the future.

IG8 In other circumstances, historical information may not be available. For example, a newly listed entity will have little, if any, historical data on the volatility of its share price. Unlisted and newly listed entities are discussed further below.

IG9 In summary, an entity should not simply base estimates of volatility, option lives and dividends on historical information without considering the extent to which the past experience is expected to be reasonably predictive of future experience.

Estimated lives of employee share options

IG10 When estimating the expected life of share options granted to a group of employees, the entity could base that estimate on an appropriately weighted average expected life for the entire employee group or on appropriately weighted average lives for subgroups of employees within the group, based on more detailed data about employees' exercise behaviour (discussed further below).

IG11 Factors to consider in estimating the expected life of share options include:

(a) the length of the vesting period, because the expected life must be at least as long as the vesting period. Hence, the estimate of

expected life is based on the assumption that the options will vest. The valuation implications of vesting conditions are discussed in paragraphs IG31-IG35.

(b) the average length of time similar options have remained outstanding in the past.

(c) expected volatility of the underlying shares. On average, employees might tend to exercise options on highly volatile shares earlier than on shares with low volatility.

IG12 Separating an option grant into groups for employees with relatively homogeneous exercise behaviour is also likely to be important. Option value is not a linear function of option term; value increases at a decreasing rate as the term lengthens. For example, if all other assumptions are equal, although a two-year option is worth more than a one-year option, it is not worth twice as much. That means that calculating estimated option value on the basis of a single weighted average life that includes widely differing individual lives would overstate the total fair value of the share options granted. Separating options granted into several groups, each of which has a relatively narrow range of lives included in its weighted average life, reduces that overstatement.

IG13 For example, the experience of an entity that grants options broadly to all levels of employees might indicate that top-level executives tend to hold their options longer than middle-management employees hold theirs and that lower-level employees tend to exercise their options earlier than any other group. In addition, employees who are encouraged or required to hold a minimum amount of their employer's equity instruments, including options, might on average exercise options later than employees not subject to that provision. In those situations, separating options by groups of recipients with relatively homogeneous exercise behaviour and determining the related option values based on appropriate weighted average expected lives for each group will result in a more accurate estimate of the total fair value of the share options granted.

Expected volatility

IG14 Expected volatility is a measure of the amount by which a price is expected to fluctuate during a period. The measure of volatility used in the Black-Scholes option pricing model is the annualised standard deviation of the continuously compounded rates of return on the share over a period of time. Volatility is typically expressed in annualised terms that are comparable regardless of the time period used in the calculation,

for example, daily, weekly or monthly price observations.

IG15 The rate of return (which may be positive or negative) on a share for a period measures how much a shareholder has benefited from dividends and appreciation (or depreciation) of the share price.

IG16 The expected annualised volatility of a share is the range within which the continuously compounded annual rate of return is expected to fall approximately two-thirds of the time. For example, to say that a share with an expected continuously compounded rate of return of 12 per cent has a volatility of 30 per cent means that the probability that the rate of return on the share for one year will be between –18 per cent (12% - 30%) and 42 per cent (12% + 30%) is approximately two-thirds. If the share price is CU100* at the beginning of the year and no dividends are paid, the year-end share price would be expected to be between CU83.53 (CU100 × $e^{(-0.18)}$) and CU152.20 (CU100 × $e^{(0.42)}$) approximately two-thirds of the time.

IG17 Generally, at least 20 to 30 price observations made at regular intervals are needed to compute a statistically valid standard deviation. For long-term options, historical volatility generally should be calculated based on more—probably many more—than 30 observations. In addition, an entity may need to adjust historical average annualised volatility to estimate a reasonable expected volatility over the expected life of an option.

IG18 Factors to consider in estimating expected volatility include:

(a) the historical volatility of the share price over the most recent period that is generally commensurate with the expected option life.

(b) the length of time an entity's shares have been publicly traded. A newly listed entity might have a high historical volatility, compared with similar entities that have been listed longer. Further guidance for newly listed entities is given below.

(c) other factors indicating that expected future volatility might differ from past volatility. For example, if an entity's share price was extraordinarily volatile for some identifiable period of time because of a failed takeover bid or a major restructuring, that period could be disregarded in computing historical average annual volatility.

(d) appropriate and regular intervals for price observations. In general,

* In this guidance, monetary amounts are denominated in 'currency units' (CU).

weekly price observations should be sufficient for computing long-term historical volatility. The price observations should be consistent from period to period. For example, an entity might use the closing price for each week or the highest price for the week, but it should not use the closing price for some weeks and the highest price for other weeks.

Newly listed entities

IG19 As noted in paragraph IG18, an entity should consider historical volatility of the share price over the most recent period that is generally commensurate with the expected option life. If a newly listed entity does not have sufficient information on historical volatility, it should nevertheless compute historical volatility for the longest period for which trading activity is available. It could also consider the historical volatility of similar entities following a comparable period in their lives. For example, an entity that has been listed for only one year and grants options with an average expected life of five years might consider the pattern and level of historical volatility of entities in the same industry that have been listed longer for the first six years in which the shares of those entities were publicly traded.

Unlisted entities

IG20 An unlisted entity will not have historical information upon which to base an estimate of expected volatility. It will therefore have to estimate expected volatility by some other means. Some suggestions are set out below.

IG21 In some cases, an unlisted entity that regularly issues options or shares to employees (or other parties) might have set up an internal market for its shares. The volatility of those share prices could provide a reasonable basis for estimating expected volatility.

IG22 Alternatively, the entity could consider the historical or implied volatility of similar listed entities, for which share price or option price information is available, to use as the basis for an estimate of expected volatility. This would be appropriate if the entity has based the value of its shares on the share prices of similar listed entities.

IG23 If the entity has not based its estimate of the value of its shares on the share prices of similar listed entities, and has instead used another valuation methodology to value its shares, the entity could derive an estimate of expected volatility consistent with that valuation methodology.

For example, the entity might value its shares on a net asset or earnings basis. It could consider the expected volatility of those net asset values or earnings.

Expected dividends

IG24 Whether expected dividends should be taken into account when measuring the fair value of shares or options granted depends on whether the counterparty is entitled to dividends or dividend equivalents.

IG25 For example, if employees were granted options and are entitled to dividends on the underlying shares or dividend equivalents (which might be paid in cash or applied to reduce the exercise price) between grant date and exercise date, the options granted should be valued as if no dividends will be paid on the underlying shares, ie the input for expected dividends should be zero.

IG26 Similarly, in estimating the grant date valuation of shares granted, no adjustment is required for expected dividends if the other party is entitled to receive dividends paid during the vesting period.

IG27 Conversely, if the employees (or other parties) are not entitled to dividends or dividend equivalents during the vesting period (or before exercise, in the case of an option), the grant date valuation of the rights to shares or options should take expected dividends into account. That is to say, in estimating the fair value of an option grant, expected dividends should be included in the application of an option pricing model. In estimating the fair value of a share grant, that valuation should be reduced by the present value of dividends expected to be paid during the vesting period.

IG28 Option pricing models generally call for expected dividend yield. However, the models may be modified to use an expected dividend amount rather than a yield. An entity may use either its expected yield or its expected payments. If the entity uses the latter, it should consider its historical pattern of increases in dividends. For example, if an entity's policy has generally been to increase dividends by approximately 3 per cent per year, its estimated option value should not assume a fixed dividend amount throughout the expected life unless there is evidence that supports that assumption.

IG29 Generally, the assumption about expected dividends should be based on publicly available information. An entity that does not pay dividends and

has no plans to do so should assume an expected dividend yield of zero. However, an emerging entity with no history of paying dividends might expect to begin paying dividends during the expected lives of its employee stock options. Those entities could use an average of their past dividend yield (zero) and the mean dividend yield of an appropriately comparable peer group.

Risk-free interest rate

IG30 The risk-free interest rate is the implied yield currently available on zero-coupon government issues, in the country in which the entity's shares are traded or principally traded, with a remaining term equal to the expected life of the option being valued. If the entity is unlisted, it should use the implied yield on zero-coupon government issues in the country in which it operates or principally operates. It may be necessary to use an appropriate substitute, if no such government issues exist. Furthermore, if the exercise price of the option being valued is expressed in another currency (ie a currency other than that of the country in which the entity's shares are traded or principally traded or, for an unlisted entity, the country in which it operates or principally operates), the risk-free interest rate should be the implied yield on zero-coupon government issues of the country in whose currency the exercise price is expressed. In this case, the share price, and the share price observations used to calculate volatility, should also be expressed in that currency.

Vesting conditions

IG31 Grants of shares or options to employees typically have vesting conditions. The most common condition is that the employee must remain in the entity's employ for a specified period, say three years. If the employee leaves during that period, the shares or options are forfeited. There might also be other performance conditions, eg that the company achieves a specified growth in share price or earnings.

IG32 The existence of vesting conditions means that the shares or options granted are less valuable than otherwise equivalent shares or options with no vesting conditions. For example, the employees might partly perform their side of the arrangement, eg by working for part of the period, then have to leave for some reason, and forfeit the shares or options without compensation for that part performance. If there are other performance conditions, such as achieving a specified growth in the share price or earnings, an employee might work for the entire vesting period, do his/her best to meet the targets, and still fail to meet the

vesting conditions and therefore forfeit the shares or options.

IG33 The [draft] IFRS requires that, if a grant of shares or options is conditional upon vesting conditions being satisfied, those conditions should be taken into account when measuring the fair value of the shares or options granted. In other words, the grant date valuation should be reduced to allow for the possibility of forfeiture because of failure to satisfy the vesting conditions.

IG34 The entity could take into account vesting conditions by adapting an option pricing model. For example, option pricing models can be adapted to take into account some types of market-based performance conditions, such as a target stock price that must be achieved for the options to vest. Similarly, the entity might incorporate into an option pricing model actuarial assumptions about employee turnover. In other cases, a more simplistic approach might be applied. For example, an entity might estimate the weighted average probability of forfeiture at grant date, and reduce accordingly the valuation produced by an option pricing model. For example, if the valuation calculated using an option pricing model was CU15 per option, and the entity estimated, on the basis of a weighted average probability, that 20 per cent of the options will be forfeited because of failure to satisfy the vesting conditions, allowing for the possibility of forfeiture would reduce the grant date value of each option granted from CU15 to CU12. Appendix B of the [draft] IFRS contains examples in which this approach is used to take vesting conditions into account when measuring the fair value of options granted. In Example 1, the only vesting condition is that the employees must complete a specified period of service before the options vest. In Example 2 there is also a performance condition that must be met before the options vest.

IG35 When estimating the fair value of shares or options granted to a group of employees, the entity should consider whether to divide the employees into subgroups. For example, if the entity's experience indicates that employee turnover is higher for a particular subgroup of employees, separating the options granted into employee subgroups with a relatively homogeneous turnover rate and determining the possibility of forfeiture for each subgroup will result in a more accurate estimate of the fair value of the share options granted.

Capital structure effects

IG36 Typically, third parties, not the entity, write traded options. When these options are exercised, the writer delivers shares to the option holder. Those shares are acquired from existing shareholders. Hence the exercise of traded options has no dilutive effect.

IG37 In contrast, if options are written by the entity, new shares are issued when those options are exercised (either actually issued or issued in substance, if shares previously repurchased and held in treasury are used). Given that the shares will be issued at the exercise price rather than the current market price at the date of exercise, this actual or potential dilution might reduce the share price, so that the option holder does not make as large a gain on exercise as on exercising an otherwise similar traded option that does not dilute the share price.

IG38 Whether this has a significant effect on the value of the options granted depends on various factors, such as the number of new shares that will be issued on exercise of the options compared with the number of shares already on issue. Also, if the market already expects that the option grant will take place, the market may have already factored the potential dilution into the share price at the date of grant.

IG39 However, the entity should consider whether the possible dilutive effect of the future exercise of the options granted might have an impact on their estimated fair value at grant date. Option pricing models can be adapted to take into account this potential dilutive effect.

Fair value of share-based payment arrangements with cash alternatives

IG40 Some employee share-based payment arrangements permit the employee to choose whether to receive cash or equity instruments. In this situation, a compound financial instrument has been granted, ie a financial instrument with debt and equity components.

IG41 The [draft] IFRS requires the entity to estimate the fair value of the compound financial instrument at grant date, by first measuring the fair value of the debt component, and then measuring the fair value of the equity component—taking into account that the employee must forfeit the right to receive cash to receive the equity instrument.

IG42 Typically, share-based payment arrangements with cash alternatives are structured so that the fair value of one settlement alternative is the same as the other. For example, the employee might have the choice of receiving share options or cash share appreciation rights. In such cases, the fair value of the equity component will be zero, and hence the fair value of the compound financial instrument will be the same as the fair value of the debt component.

IG43 However, if the fair values of the settlement alternatives differ, the fair value of the equity component will be greater than zero, and hence the fair value of the compound financial instrument will be greater than the fair value of the debt component. The following example illustrates how to estimate the fair value of a compound financial instrument in such a situation.

Example

An entity grants to its chief executive officer (CEO) the right to choose either of the following:

(a) 1,000 phantom shares, ie a right to a cash payment equal to the value of 1,000 shares.

(b) 3,000 share options with an exercise price of CU50 per share.

There are no vesting conditions, so the rights granted vest immediately. At grant date, the entity's share price is CU50 per share. The CEO can choose whether to exercise the options or to cash in the phantom shares at any time during the next five years. Exercise of the options cancels the CEO's rights to the phantom shares, and cashing in the phantom shares cancels the CEO's rights to the options. The cash value of the phantom shares will be paid to the CEO at the end of five years if the options are not exercised before then.

With a 3-to-1 ratio of share options to phantom shares, the exercise of three share options will produce a higher gain than the receipt of cash equal to the value of one share if the share price appreciates from grant date by more than 50 per cent. Below that point, one phantom share is more valuable than the gain on three options. To illustrate that

relationship, the results if the share price increases by 50 per cent to CU75 are:

	Phantom shares		Exercise of options	
Market value	CU75,000	(CU75 × 1,000)	CU225,000	(CU75 × 3,000)
Less purchase price	CU 0		CU150,000	(CU50 × 3,000)
Net cash value	CU75,000		CU 75,000	

If the price of the entity's shares increases from CU50 to CU75, each alternative will produce the same net cash inflow (ignoring transaction costs) to the CEO. If the price increases only to CU74, the value of one phantom share exceeds the gain on exercising three options, which would be CU72 [3 × (CU74 — CU50)]. But if the price increases to CU76, the gain on exercising three options, CU78 [3 × (CU76 — CU50)], exceeds the value of one phantom share.

At grant date, the CEO could take CU50,000 cash for the phantom shares and forfeit the options. Therefore, the total value of the rights granted to the CEO on grant date must exceed CU50,000 because at share prices above CU75, the CEO receives a higher amount than would the holder of one share. To exercise the 3,000 options, the CEO must forfeit the equivalent of 1,000 shares, in addition to paying the total exercise price of CU150,000 (3,000 × CU50). In effect, the CEO receives only 2,000 shares upon exercise. That is the same as if the CEO had options to purchase 2,000 shares for CU75 per share.

The expected volatility of the entity's share price is assumed to be 30 per cent, the risk-free interest rate is 7 per cent, the entity does not pay dividends on its shares, and the expected life of the options is five years. Using those assumptions, and the current share price of CU50, the fair value of an option with an exercise price of CU75 is CU12.13. Therefore, the total fair value of the rights granted to the CEO on grant date is:

Phantom shares (1,000 × CU50)	CU50,000
Options (2,000 × CU12.13)	CU24,260
Total value of rights granted	CU74,260