

**Impairment of Assets**  
Illustrative Examples

This Guidance is applicable for annual reporting period beginning on  
1 January 2023.

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## Illustrative examples

*These examples accompany, but are not part of, FRS 36. All the examples assume that the entities concerned have no transactions other than those described. In the examples monetary amounts are denominated in 'currency units (CU)'.*

### Example 1 Identification of cash-generating units

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*The purpose of this example is:*

- (a) *to indicate how cash-generating units are identified in various situations; and*
- (b) *to highlight certain factors that an entity may consider in identifying the cash-generating unit to which an asset belongs.*

#### A - Retail store chain

##### Background

IE1 Store X belongs to a retail store chain M. X makes all its retail purchases through M's purchasing centre. Pricing, marketing, advertising and human resources policies (except for hiring X's cashiers and sales staff) are decided by M. M also owns five other stores in the same city as X (although in different neighbourhoods) and 20 other stores in other cities. All stores are managed in the same way as X. X and four other stores were purchased five years ago and goodwill was recognised.

What is the cash-generating unit for X (X's cash-generating unit)?

##### Analysis

- IE2 In identifying X's cash-generating unit, an entity considers whether, for example:
- (a) internal management reporting is organised to measure performance on a store-by-store basis; and
  - (b) the business is run on a store-by-store profit basis or on a region/city basis.
- IE3 All M's stores are in different neighbourhoods and probably have different customer bases. So, although X is managed at a corporate level, X generates cash inflows that are largely independent of those of M's other stores. Therefore, it is likely that X is a cash-generating unit.
- IE4 If X's cash-generating unit represents the lowest level within M at which the goodwill is monitored for internal management purposes, M applies to that cash-generating unit the impairment test described in paragraph 90 of FRS 36. If information about the carrying amount of goodwill is not available and monitored for internal management purposes at the level of X's cash-generating unit, M applies to that cash-generating unit the impairment test described in paragraph 88 of FRS 36.

## B - Plant for an intermediate step in a production process

### Background

- IE5 A significant raw material used for plant Y's final production is an intermediate product bought from plant X of the same entity. X's products are sold to Y at a transfer price that passes all margins to X. Eighty per cent of Y's final production is sold to customers outside of the entity. Sixty per cent of X's final production is sold to Y and the remaining 40 per cent is sold to customers outside of the entity.

For each of the following cases, what are the cash-generating units for X and Y?

Case 1: X could sell the products it sells to Y in an active market. Internal transfer prices are higher than market prices.

Case 2: There is no active market for the products X sells to Y.

### Analysis

#### Case 1

- IE6 X could sell its products in an active market and, so, generate cash inflows that would be largely independent of the cash inflows from Y. Therefore, it is likely that X is a separate cash-generating unit, although part of its production is used by Y (see paragraph 70 of FRS 36).
- IE7 It is likely that Y is also a separate cash-generating unit. Y sells 80 per cent of its products to customers outside of the entity. Therefore, its cash inflows can be regarded as largely independent.
- IE8 Internal transfer prices do not reflect market prices for X's output. Therefore, in determining value in use of both X and Y, the entity adjusts financial budgets/forecasts to reflect management's best estimate of future prices that could be achieved in arm's length transactions for those of X's products that are used internally (see paragraph 70 of FRS 36).

#### Case 2

- IE9 It is likely that the recoverable amount of each plant cannot be assessed independently of the recoverable amount of the other plant because:
- (a) the majority of X's production is used internally and could not be sold in an active market. So, cash inflows of X depend on demand for Y's products. Therefore, X cannot be considered to generate cash inflows that are largely independent of those of Y.
  - (b) the two plants are managed together.
- IE10 As a consequence, it is likely that X and Y together are the smallest group of assets that generates cash inflows that are largely independent.

## C - Single product entity

### Background

IE11 Entity M produces a single product and owns plants A, B and C. Each plant is located in a different continent. A produces a component that is assembled in either B or C. The combined capacity of B and C is not fully utilised. M's products are sold worldwide from either B or C. For example, B's production can be sold in C's continent if the products can be delivered faster from B than from C. Utilisation levels of B and C depend on the allocation of sales between the two sites.

For each of the following cases, what are the cash-generating units for A, B and C?

Case 1: There is an active market for A's products.

Case 2: There is no active market for A's products.

### Analysis

#### Case 1

IE12 It is likely that A is a separate cash-generating unit because there is an active market for its products (see Example B - Plant for an intermediate step in a production process, Case 1).

IE13 Although there is an active market for the products assembled by B and C, cash inflows for B and C depend on the allocation of production across the two sites. It is unlikely that the future cash inflows for B and C can be determined individually. Therefore, it is likely that B and C together are the smallest identifiable group of assets that generates cash inflows that are largely independent.

IE14 In determining the value in use of A and B plus C, M adjusts financial budgets/forecasts to reflect its best estimate of future prices that could be achieved in arm's length transactions for A's products (see paragraph 70 of FRS 36).

#### Case 2

IE15 It is likely that the recoverable amount of each plant cannot be assessed independently because:

- (a) there is no active market for A's products. Therefore, A's cash inflows depend on sales of the final product by B and C.
- (b) although there is an active market for the products assembled by B and C, cash inflows for B and C depend on the allocation of production across the two sites. It is unlikely that the future cash inflows for B and C can be determined individually.

IE16 As a consequence, it is likely that A, B and C together (ie M as a whole) are the smallest identifiable group of assets that generates cash inflows that are largely independent.

## D - Magazine titles

### Background

- IE17 A publisher owns 150 magazine titles of which 70 were purchased and 80 were self-created. The price paid for a purchased magazine title is recognised as an intangible asset. The costs of creating magazine titles and maintaining the existing titles are recognised as an expense when incurred. Cash inflows from direct sales and advertising are identifiable for each magazine title. Titles are managed by customer segments. The level of advertising income for a magazine title depends on the range of titles in the customer segment to which the magazine title relates. Management has a policy to abandon old titles before the end of their economic lives and replace them immediately with new titles for the same customer segment.

What is the cash-generating unit for an individual magazine title?

### Analysis

- IE18 It is likely that the recoverable amount of an individual magazine title can be assessed. Even though the level of advertising income for a title is influenced, to a certain extent, by the other titles in the customer segment, cash inflows from direct sales and advertising are identifiable for each title. In addition, although titles are managed by customer segments, decisions to abandon titles are made on an individual title basis.
- IE19 Therefore, it is likely that individual magazine titles generate cash inflows that are largely independent of each other and that each magazine title is a separate cash-generating unit.

## E - Building half-rented to others and half-occupied for own use

### Background

- IE20 M is a manufacturing company. It owns a headquarters building that used to be fully occupied for internal use. After down-sizing, half of the building is now used internally and half rented to third parties. The lease agreement with the tenant is for five years.

What is the cash-generating unit of the building?

### Analysis

- IE21 The primary purpose of the building is to serve as a corporate asset, supporting M's manufacturing activities. Therefore, the building as a whole cannot be considered to generate cash inflows that are largely independent of the cash inflows from the entity as a whole. So, it is likely that the cash-generating unit for the building is M as a whole.
- IE22 The building is not held as an investment. Therefore, it would not be appropriate to determine the value in use of the building based on projections of future market related rents.

## Example 2 Calculation of value in use and recognition of an impairment loss

*In this example, tax effects are ignored.*

### Background and calculation of value in use

IE23 At the end of 20X0, entity T acquires entity M for CU10,000. M has manufacturing plants in three countries.

Schedule 1. Data at the end of 20X0

<i>End of 20X0</i>	<i>Allocation of purchase price</i>	<i>Fair value of identifiable assets</i>	<i>Goodwill<sup>(a)</sup></i>
	CU	CU	CU
Activities in Country A	3,000	2,000	1,000
Activities in Country B	2,000	1,500	500
Activities in Country C	<u>5,000</u>	<u>3,500</u>	<u>1,500</u>
Total	<u><u>10,000</u></u>	<u><u>7,000</u></u>	<u><u>3,000</u></u>

(a) Activities in each country represent the lowest level at which the goodwill is monitored for internal management purposes (determined as the difference between the purchase price of the activities in each country, as specified in the purchase agreement, and the fair value of the identifiable assets).

IE23A Because goodwill has been allocated to the activities in each country, each of those activities must be tested for impairment annually or more frequently if there is any indication that it may be impaired (see paragraph 90 of FRS 36).

IE24 The recoverable amounts (ie higher of value in use and fair value less costs of disposal) of the cash-generating units are determined on the basis of value in use calculations. At the end of 20X0 and 20X1, the value in use of each cash-generating unit exceeds its carrying amount. Therefore the activities in each country and the goodwill allocated to those activities are regarded as not impaired.

IE25 At the beginning of 20X2, a new government is elected in Country A. It passes legislation significantly restricting exports of T's main product. As a result, and for the foreseeable future, T's production in Country A will be cut by 40 per cent.

IE26 The significant export restriction and the resulting production decrease require T also to estimate the recoverable amount of the Country A operations at the beginning of 20X2.

IE27 T uses straight-line depreciation over a 12-year life for the Country A identifiable assets and anticipates no residual value.

IE28 To determine the value in use for the Country A cash-generating unit (see Schedule 2), T:

- (a) prepares cash flow forecasts derived from the most recent financial budgets/forecasts for the next five years (years 20X2–20X6) approved by management.
- (b) estimates subsequent cash flows (years 20X7–20Y2) based on declining growth rates. The growth rate for 20X7 is estimated to be 3 per cent. This rate is lower than the average long-term growth rate for the market in Country A.

- (c) selects a 15 per cent discount rate, which represents a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the Country A cash-generating unit.

### Recognition and measurement of impairment loss

- IE29 The recoverable amount of the Country A cash-generating unit is CU1,360.
- IE30 T compares the recoverable amount of the Country A cash-generating unit with its carrying amount (see Schedule 3).
- IE31 Because the carrying amount exceeds the recoverable amount by CU1,473, T recognises an impairment loss of CU1,473 immediately in profit or loss. The carrying amount of the goodwill that relates to the Country A operations is reduced to zero before reducing the carrying amount of other identifiable assets within the Country A cash-generating unit (see paragraph 104 of FRS 36).
- IE32 Tax effects are accounted for separately in accordance with FRS 12 *Income Taxes* (see Illustrative Example 3A).

Schedule 2. Calculation of the value in use of the Country A cash-generating unit at the beginning of 20X2

Year	Long-term growth rates	Future cash flows	Present value factor at 15% discount rate <sup>(a)</sup>	Discounted future cash flows
		CU		CU
20X2 (n=1)		230 <sup>(b)</sup>	0.86957	200
20X3		253 <sup>(b)</sup>	0.75614	191
20X4		273 <sup>(b)</sup>	0.65752	180
20X5		290 <sup>(b)</sup>	0.57175	166
20X6		304 <sup>(b)</sup>	0.49718	151
20X7	3%	313 <sup>(c)</sup>	0.43233	135
20X8	(2)%	307 <sup>(c)</sup>	0.37594	115
20X9	(6)%	289 <sup>(c)</sup>	0.32690	94
20Y0	(15)%	245 <sup>(c)</sup>	0.28426	70
20Y1	(25)%	184 <sup>(c)</sup>	0.24719	45
20Y2	(67)%	61 <sup>(c)</sup>	0.21494	13
Value in use				<u>1,360</u>

(a) The present value factor is calculated as  $k = 1/(1+a)^n$ , where a = discount rate and n = period of discount.

(b) Based on management's best estimate of net cash flow projections (after the 40% cut).

(c) Based on an extrapolation from preceding year cash flow using declining growth rates.



Schedule 3. Calculation and allocation of the impairment loss for the Country A cash-generating unit at the beginning of 20X2

<i>Beginning of 20X2</i>	<i>Goodwill</i>	<i>Identifiable assets</i>	<i>Total</i>
	CU	CU	CU
Historical cost	1,000	2,000	3,000
Accumulated depreciation (20X1)	<u>–</u>	<u>(167)</u>	<u>(167)</u>
Carrying amount	1,000	1,833	2,833
Impairment loss	<u>(1,000)</u>	<u>(473)</u>	<u>(1,473)</u>
Carrying amount after impairment loss	<u>–</u>	<u>1,360</u>	<u>1,360</u>

### **Example 3 Deferred tax effects**

Use the data for entity T as presented in Example 2, with supplementary information as provided in this example.

#### **A - Deferred tax effects of the recognition of an impairment loss**

IE33 At the beginning of 20X2, the tax base of the identifiable assets of the Country A cash-generating unit is CU900. Impairment losses are not deductible for tax purposes. The tax rate is 40 per cent.

IE34 The recognition of an impairment loss on the assets of the Country A cash-generating unit reduces the taxable temporary difference related to those assets. The deferred tax liability is reduced accordingly.

<i>Beginning of 20X2</i>	<i>Identifiable assets before impairment loss</i>	<i>Impairment loss</i>	<i>Identifiable assets after impairment loss</i>
	CU	CU	CU
Carrying amount (Example 2)	1,833	(473)	1,360
Tax base	<u>900</u>	<u>–</u>	<u>900</u>
Taxable temporary difference	<u>933</u>	<u>(473)</u>	<u>460</u>
Deferred tax liability at 40%	<u>373</u>	<u>(189)</u>	<u>184</u>

IE35 In accordance with FRS 12 *Income Taxes*, no deferred tax relating to the goodwill was recognised initially. Therefore, the impairment loss relating to the goodwill does not give rise to a deferred tax adjustment.

## B - Recognition of an impairment loss creates a deferred tax asset

IE36 An entity has an identifiable asset with a carrying amount of CU1,000. Its recoverable amount is CU650. The tax rate is 30 per cent and the tax base of the asset is CU800. Impairment losses are not deductible for tax purposes. The effect of the impairment loss is as follows:

	<i>Before impairment</i>	<i>Effect of impairment</i>	<i>After impairment</i>
	CU	CU	CU
Carrying amount	1,000	(350)	650
Tax base	800	–	800
Taxable (deductible) temporary difference	<u>200</u>	<u>(350)</u>	<u>(150)</u>
Deferred tax liability (asset) at 30%	<u>60</u>	<u>(105)</u>	<u>(45)</u>

IE37 In accordance with FRS 12, the entity recognises the deferred tax asset to the extent that it is probable that taxable profit will be available against which the deductible temporary difference can be utilised.

### Example 4 Reversal of an impairment loss

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Use the data for entity T as presented in Example 2, with supplementary information as provided in this example. In this example, tax effects are ignored.

#### Background

IE38 In 20X3, the government is still in office in Country A, but the business situation is improving. The effects of the export laws on T's production are proving to be less drastic than initially expected by management. As a result, management estimates that production will increase by 30 per cent. This favourable change requires T to re-estimate the recoverable amount of the net assets of the Country A operations (see paragraphs 110 and 111 of FRS 36). The cash-generating unit for the net assets of the Country A operations is still the Country A operations.

IE39 Calculations similar to those in Example 2 show that the recoverable amount of the Country A cash-generating unit is now CU1,910.

#### Reversal of impairment loss

IE40 T compares the recoverable amount and the net carrying amount of the Country A cash-generating unit.

## Schedule 1. Calculation of the carrying amount of the Country A cash-generating unit at the end of 20X3

	<i>Goodwill</i>	<i>Identifiable assets</i>	<i>Total</i>
	CU	CU	CU
<i>Beginning of 20X2 (Example 2)</i>			
Historical cost	1,000	2,000	3,000
Accumulated depreciation	–	(167)	(167)
Impairment loss	<u>(1,000)</u>	<u>(473)</u>	<u>(1,473)</u>
Carrying amount after impairment loss	<u>–</u>	<u>1,360</u>	<u>1,360</u>
<i>End of 20X3</i>			
Additional depreciation (2 years) <sup>(a)</sup>	<u>–</u>	<u>(247)</u>	<u>(247)</u>
Carrying amount	<u>–</u>	<u>1,113</u>	<u>1,113</u>
Recoverable amount			<u>1,910</u>
Excess of recoverable amount over carrying amount			<u>797</u>

(a) After recognition of the impairment loss at the beginning of 20X2, T revised the depreciation charge for the Country A identifiable assets (from CU166.7 per year to CU123.6 per year), based on the revised carrying amount and remaining useful life (11 years).

- IE41 There has been a favourable change in the estimates used to determine the recoverable amount of the Country A net assets since the last impairment loss was recognised. Therefore, in accordance with paragraph 114 of FRS 36, T recognises a reversal of the impairment loss recognised in 20X2.
- IE42 In accordance with paragraphs 122 and 123 of FRS 36, T increases the carrying amount of the Country A identifiable assets by CU387 (see Schedule 3), ie up to the lower of recoverable amount (CU1,910) and the identifiable assets' depreciated historical cost (CU1,500) (see Schedule 2). This increase is recognised immediately in profit or loss.
- IE43 In accordance with paragraph 124 of FRS 36, the impairment loss on goodwill is not reversed.

## Schedule 2. Determination of the depreciated historical cost of the Country A identifiable assets at the end of 20X3

<i>End of 20X3</i>		<i>Identifiable assets</i>
		CU
Historical cost		2,000
Accumulated depreciation (166.7 × 3 years)		<u>(500)</u>
Depreciated historical cost		<u>1,500</u>
Carrying amount (Schedule 1)		<u>1,113</u>
Difference		<u>387</u>

## Schedule 3. Carrying amount of the Country A assets at the end of 20X3

<i>End of 20X3</i>	<i>Goodwill</i>	<i>Identifiable assets</i>	<i>Total</i>
	CU	CU	CU
Gross carrying amount	1,000	2,000	3,000
Accumulated amortisation	–	(414)	(414)
Accumulated impairment loss	<u>(1,000)</u>	<u>(473)</u>	<u>(1,473)</u>
Carrying amount	<u>–</u>	<u>1,113</u>	<u>1,113</u>
Reversal of impairment loss	<u>0</u>	<u>387</u>	<u>387</u>
Carrying amount after reversal of impairment loss	<u>–</u>	<u>1,500</u>	<u>1,500</u>

### **Example 5 Treatment of a future restructuring**

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*In this example, tax effects are ignored.*

#### **Background**

- IE44 At the end of 20X0, entity K tests a plant for impairment. The plant is a cash-generating unit. The plant's assets are carried at depreciated historical cost. The plant has a carrying amount of CU3,000 and a remaining useful life of 10 years.
- IE45 The plant's recoverable amount (ie higher of value in use and fair value less costs of disposal) is determined on the basis of a value in use calculation. Value in use is calculated using a pre-tax discount rate of 14 per cent.
- IE46 Management approved budgets reflect that:
- (a) at the end of 20X3, the plant will be restructured at an estimated cost of CU100. Since K is not yet committed to the restructuring, a provision has not been recognised for the future restructuring costs.
  - (b) there will be future benefits from this restructuring in the form of reduced future cash outflows.
- IE47 At the end of 20X2, K becomes committed to the restructuring. The costs are still estimated to be CU100 and a provision is recognised accordingly. The plant's estimated future cash flows reflected in the most recent management approved budgets are given in paragraph IE51 and a current discount rate is the same as at the end of 20X0.
- IE48 At the end of 20X3, actual restructuring costs of CU100 are incurred and paid. Again, the plant's estimated future cash flows reflected in the most recent management approved budgets and a current discount rate are the same as those estimated at the end of 20X2.

**At the end of 20X0**

Schedule 1. Calculation of the plant's value in use at the end of 20X0

<i>Year</i>	<i>Future cash flows</i>	<i>Discounted at 14%</i>
	CU	CU
20X1	300 <sup>(a)</sup>	263
20X2	280 <sup>(b)</sup>	215
20X3	420 <sup>(b)</sup>	283
20X4	520 <sup>(b)</sup>	308
20X5	350 <sup>(b)</sup>	182
20X6	420 <sup>(b)</sup>	191
20X7	480 <sup>(b)</sup>	192
20X8	480 <sup>(b)</sup>	168
20X9	460 <sup>(b)</sup>	141
20X10	400 <sup>(b)</sup>	108
		2,051

(a) Excludes estimated restructuring costs reflected in management budgets.

(b) Excludes estimated benefits expected from the restructuring reflected in management budgets.

IE49 The plant's recoverable amount (ie value in use) is less than its carrying amount. Therefore, K recognises an impairment loss for the plant.

Schedule 2. Calculation of the impairment loss at the end of 20X0

	<i>Plant</i>
	CU
Carrying amount before impairment loss	3,000
Recoverable amount (Schedule 1)	2,051
Impairment loss	(949)
Carrying amount after impairment loss	2,051

**At the end of 20X1**

IE50 No event occurs that requires the plant's recoverable amount to be re-estimated. Therefore, no calculation of the recoverable amount is required to be performed.

**At the end of 20X2**

IE51 The entity is now committed to the restructuring. Therefore, in determining the plant's value in use, the benefits expected from the restructuring are considered in forecasting cash flows. This results in an increase in the estimated future cash flows used to determine value in use at the end of 20X0. In accordance with paragraphs 110 and 111 of FRS 36, the recoverable amount of the plant is re-determined at the end of 20X2.

## Schedule 3. Calculation of the plant's value in use at the end of 20X2

<i>Year</i>	<i>Future cash flows</i>	<i>Discounted at 14%</i>
	CU	CU
20X3	420 <sup>(a)</sup>	368
20X4	570 <sup>(b)</sup>	439
20X5	380 <sup>(b)</sup>	256
20X6	450 <sup>(b)</sup>	266
20X7	510 <sup>(b)</sup>	265
20X8	510 <sup>(b)</sup>	232
20X9	480 <sup>(b)</sup>	192
20X10	410 <sup>(b)</sup>	144
		<u>2,162</u>

(a) Excludes estimated restructuring costs because a liability has already being recognised.

(b) Includes estimated benefits expected from the restructuring reflected in management budgets.

IE52 The plant's recoverable amount (value in use) is higher than its carrying amount (see Schedule 4). Therefore, K reverses the impairment loss recognised for the plant at the end of 20X0.

## Schedule 4. Calculation of the reversal of the impairment loss at the end of 20X2

	<i>Plant</i>
	CU
Carrying amount at the end of 20X0 (Schedule 2)	2,051
End of 20X2	
Depreciation charge (for 20X1 and 20X2–Schedule 5)	<u>(410)</u>
Carrying amount before reversal	<u>1,641</u>
Recoverable amount (Schedule 3)	<u>2,162</u>
Reversal of the impairment loss	<u>521</u>
Carrying amount after reversal	<u>2,162</u>
Carrying amount: depreciated historical cost (Schedule 5)	2,400 <sup>(a)</sup>

(a) The reversal does not result in the carrying amount of the plant exceeding what its carrying amount would have been at depreciated historical cost. Therefore, the full reversal of the impairment loss is recognised.

**At the end of 20X3**

IE53 There is a cash outflow of CU100 when the restructuring costs are paid. Even though a cash outflow has taken place, there is no change in the estimated future cash flows used to determine value in use at the end of 20X2. Therefore, the plant's recoverable amount is not calculated at the end of 20X3.

## Schedule 5. Summary of the carrying amount of the plant

<i>End of year</i>	<i>Depreciated historical cost</i>	<i>Recoverable amount</i>	<i>Adjusted depreciation charge</i>	<i>Impairment loss</i>	<i>Carrying amount after impairment</i>
	CU	CU	CU	CU	CU
20X0	3,000	2,051	0	(949)	2,051
20X1	2,700	nc	(205)	0	1,846
20X2	2,400	2,162	(205)	521	2,162
20X3	2,100	nc	(270)	0	1,892

nc= not calculated as there is no indication that the impairment loss may have increased/decreased

## Example 6 Treatment of future costs

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*In this example, tax effects are ignored.*

### Background

- IE54 At the end of 20X0, entity F tests a machine for impairment. The machine is a cash-generating unit. It is carried at depreciated historical cost and its carrying amount is CU150,000. It has an estimated remaining useful life of 10 years.
- IE55 The machine's recoverable amount (ie higher of value in use and fair value less costs of disposal) is determined on the basis of a value in use calculation. Value in use is calculated using a pre-tax discount rate of 14 per cent.
- IE56 Management approved budgets reflect:
- estimated costs necessary to maintain the level of economic benefit expected to arise from the machine in its current condition; and
  - that in 20X4, costs of CU25,000 will be incurred to enhance the machine's performance by increasing its productive capacity.
- IE57 At the end of 20X4, costs to enhance the machine's performance are incurred. The machine's estimated future cash flows reflected in the most recent management approved budgets are given in paragraph IE60 and a current discount rate is the same as at the end of 20X0.

**At the end of 20X0**

Schedule 1. Calculation of the machine's value in use at the end of 20X0

Year	Future	Discounted
	cash flows	at 14%
	CU	CU
20X1	22,165 <sup>(a)</sup>	19,443
20X2	21,450 <sup>(a)</sup>	16,505
20X3	20,550 <sup>(a)</sup>	13,871
20X4	24,725 <sup>(a),(b)</sup>	14,639
20X5	25,325 <sup>(a),(c)</sup>	13,153
20X6	24,825 <sup>(a),(c)</sup>	11,310
20X7	24,123 <sup>(a),(c)</sup>	9,640
20X8	25,533 <sup>(a),(c)</sup>	8,951
20X9	24,234 <sup>(a),(c)</sup>	7,452
20X10	22,850 <sup>(a),(c)</sup>	6,164
Value in use		<u>121,128</u>

(a) Includes estimated costs necessary to maintain the level of economic benefit expected to arise from the machine in its current condition.

(b) Excludes estimated costs to enhance the machine's performance reflected in management budgets.

(c) Excludes estimated benefits expected from enhancing the machine's performance reflected in management budgets.

IE58 The machine's recoverable amount (value in use) is less than its carrying amount. Therefore, F recognises an impairment loss for the machine.

Schedule 2. Calculation of the impairment loss at the end of 20X0

	Machine
	CU
Carrying amount before impairment loss	150,000
Recoverable amount (Schedule 1)	<u>121,128</u>
Impairment loss	<u>(28,872)</u>
Carrying amount after impairment loss	<u>121,128</u>

**Years 20X1–20X3**

IE59 No event occurs that requires the machine's recoverable amount to be re-estimated. Therefore, no calculation of recoverable amount is required to be performed.

**At the end of 20X4**



- IE60 The costs to enhance the machine's performance are incurred. Therefore, in determining the machine's value in use, the future benefits expected from enhancing the machine's performance are considered in forecasting cash flows. This results in an increase in the estimated future cash flows used to determine value in use at the end of 20X0. As a consequence, in accordance with paragraphs 110 and 111 of FRS 36, the recoverable amount of the machine is recalculated at the end of 20X4.

Schedule 3. Calculation of the machine's value in use at the end of 20X4

<i>Year</i>	<i>Future cash flows<sup>(a)</sup></i>	<i>Discounted at 14%</i>
	<i>CU</i>	<i>CU</i>
20X5	30,321	26,597
20X6	32,750	25,200
20X7	31,721	21,411
20X8	31,950	18,917
20X9	33,100	17,191
20X10	27,999	12,756
Value in use		<u>122,072</u>

- (a) Includes estimated benefits expected from enhancing the machine's performance reflected in management budgets.

- IE61 The machine's recoverable amount (ie value in use) is higher than the machine's carrying amount and depreciated historical cost (see Schedule 4). Therefore, K reverses the impairment loss recognised for the machine at the end of 20X0 so that the machine is carried at depreciated historical cost.

Schedule 4. Calculation of the reversal of the impairment loss at the end of 20X4

	<i>Machine CU</i>
Carrying amount at the end of 20X0 (Schedule 2)	121,128
<i>End of 20X4</i>	
Depreciation charge (20X1 to 20X4 – Schedule 5)	(48,452)
Costs to enhance the asset's performance	25,000
Carrying amount before reversal	<u>97,676</u>
Recoverable amount (Schedule 3)	<u>122,072</u>
Reversal of the impairment loss	<u>17,324</u>
Carrying amount after reversal	<u>115,000</u>
Carrying amount: depreciated historical cost (Schedule 5)	115,000 <sup>(a)</sup>

- (a) The value in use of the machine exceeds what its carrying amount would have been at depreciated historical cost. Therefore, the reversal is limited to an amount that does not result in the carrying amount of the machine exceeding depreciated historical cost.

Schedule 5. Summary of the carrying amount of the machine

Year	Depreciated historical cost	Recoverable amount	Adjusted depreciated charge	Impairment loss	Carrying amount after impairment
	CU	CU	CU	CU	CU
20X0	150,000	121,128	0	(28,872)	121,128
20X1	135,000	nc	(12,113)	0	109,015
20X2	120,000	nc	(12,113)	0	96,902
20X3	105,000	nc	(12,113)	0	84,789
20X4	90,000		(12,113)		
enhancement	25,000		–		
	<u>115,000</u>	122,072	<u>(12,113)</u>	17,324	115,000
20X5	95,833	nc	(19,167)	0	95,833

nc = not calculated as there is no indication that the impairment loss may have increased/decreased.

## Example 7 Impairment testing cash-generating units with goodwill and non-controlling interests

### Example 7A Non-controlling interests measured initially as a proportionate share of the net identifiable assets

*In this example, tax effects are ignored.*

#### Background

- IE62 Parent acquires an 80 per cent ownership interest in Subsidiary for CU2,100 on 1 January 20X3. At that date, Subsidiary's net identifiable assets have a fair value of CU1,500. Parent chooses to measure the non-controlling interests as the proportionate interest of Subsidiary's net identifiable assets of CU300 (20% of CU1,500). Goodwill of CU900 is the difference between the aggregate of the consideration transferred and the amount of the non-controlling interests (CU2,100 + CU300) and the net identifiable assets (CU1,500).
- IE63 The assets of Subsidiary together are the smallest group of assets that generate cash inflows that are largely independent of the cash inflows from other assets or groups of assets. Therefore Subsidiary is a cash-generating unit. Because other cash-generating units of Parent are expected to benefit from the synergies of the combination, the goodwill of CU500 related to those synergies has been allocated to other cash-generating units within Parent. Because the cash-generating unit comprising Subsidiary includes goodwill within its carrying amount, it must be tested for impairment annually, or more frequently if there is an indication that it may be impaired (see paragraph 90 of FRS 36).
- IE64 At the end of 20X3, Parent determines that the recoverable amount of cash-generating unit Subsidiary is CU1,000. The carrying amount of the net assets of Subsidiary, excluding goodwill, is CU1,350.

### Testing Subsidiary (cash-generating unit) for impairment

- IE65 Goodwill attributable to non-controlling interests is included in Subsidiary's recoverable amount of CU1,000 but has not been recognised in Parent's consolidated financial statements. Therefore, in accordance with paragraph C4 of Appendix C of FRS 36, the carrying amount of Subsidiary is grossed up to include goodwill attributable to the non-controlling interests, before being compared with the recoverable amount of CU1,000. Goodwill attributable to Parent's 80 per cent interest in Subsidiary at the acquisition date is CU400 after allocating CU500 to other cash-generating units within Parent. Therefore, goodwill attributable to the 20 per cent non-controlling interests in Subsidiary at the acquisition date is CU100.

#### Schedule 1. Testing Subsidiary for impairment at the end of 20X3

<i>End of 20X3</i>	<i>Goodwill of Subsidiary</i>	<i>Net identifiable assets</i>	<i>Total</i>
	CU	CU	CU
Carrying amount	400	1,350	1,750
Unrecognised non-controlling interests	100	–	100
Adjusted carrying amount	<u>500</u>	<u>1,350</u>	<u>1,850</u>
Recoverable amount			<u>1,000</u>
Impairment loss			<u><u>850</u></u>

### Allocating the impairment loss

- IE66 In accordance with paragraph 104 of FRS 36, the impairment loss of CU850 is allocated to the assets in the unit by first reducing the carrying amount of goodwill.
- IE67 Therefore, CU500 of the CU850 impairment loss for the unit is allocated to the goodwill. In accordance with paragraph C6 of Appendix C of FRS 36, if the partially-owned subsidiary is itself a cash-generating unit, the goodwill impairment loss is allocated to the controlling and non-controlling interests on the same basis as that on which profit or loss is allocated. In this example, profit or loss is allocated on the basis of relative ownership interests. Because the goodwill is recognised only to the extent of Parent's 80 per cent ownership interest in Subsidiary, Parent recognises only 80 per cent of that goodwill impairment loss (ie CU400).
- IE68 The remaining impairment loss of CU350 is recognised by reducing the carrying amounts of Subsidiary's identifiable assets (see Schedule 2).

#### Schedule 2. Allocation of the impairment loss for Subsidiary at the end of 20X3

<i>End of 20X3</i>	<i>Goodwill</i>	<i>Net identifiable assets</i>	<i>Total</i>
	CU	CU	CU
Carrying amount	400	1,350	1,750
Impairment loss	<u>(400)</u>	<u>(350)</u>	<u>(750)</u>
Carrying amount after impairment loss	<u>–</u>	<u>1,000</u>	<u>1,000</u>

## Example 7B Non-controlling interests measured initially at fair value and the related subsidiary is a stand-alone cash-generating unit

*In this example, tax effects are ignored.*

### Background

- IE68A Parent acquires an 80 per cent ownership interest in Subsidiary for CU2,100 on 1 January 20X3. At that date, Subsidiary's net identifiable assets have a fair value of CU1,500. Parent chooses to measure the non-controlling interests at fair value, which is CU350. Goodwill of CU950 is the difference between the aggregate of the consideration transferred and the amount of the non-controlling interests (CU2,100 + CU350) and the net identifiable assets (CU1,500).
- IE68B The assets of Subsidiary together are the smallest group of assets that generate cash inflows that are largely independent of the cash inflows from other assets or groups of assets. Therefore, Subsidiary is a cash-generating unit. Because other cash-generating units of Parent are expected to benefit from the synergies of the combination, the goodwill of CU500 related to those synergies has been allocated to other cash-generating units within Parent. Because Subsidiary includes goodwill within its carrying amount, it must be tested for impairment annually, or more frequently if there is an indication that it might be impaired (see paragraph 90 of FRS 36).

### Testing Subsidiary for impairment

- IE68C At the end of 20X3, Parent determines that the recoverable amount of cash-generating unit Subsidiary is CU1,650. The carrying amount of the net assets of Subsidiary, excluding goodwill, is CU1,350.

Schedule 1. Testing Subsidiary for impairment at the end of 20X3

<i>End of 20X3</i>	<i>Goodwill</i>	<i>Net identifiable assets</i>	<i>Total</i>
	CU	CU	CU
Carrying amount	450	1,350	1,800
Recoverable amount			1,650
Impairment loss			<u>150</u>

### Allocating the impairment loss

- IE68D In accordance with paragraph 104 of FRS 36, the impairment loss of CU150 is allocated to the assets in the unit by first reducing the carrying amount of goodwill.
- IE68E Therefore, the full amount of impairment loss of CU150 for the unit is allocated to the goodwill. In accordance with paragraph C6 of Appendix C of FRS 36, if the partially-owned subsidiary is itself a cash-generating unit, the goodwill impairment loss is allocated to the controlling and non-controlling interests on the same basis as that on which profit or loss is allocated.

## Example 7C Non-controlling interests measured initially at fair value and the related subsidiary is part of a larger cash-generating unit

*In this example, tax effects are ignored.*

### Background

IE68F Suppose that, for the business combination described in paragraph IE68A of Example 7B, the assets of Subsidiary will generate cash inflows together with other assets or groups of assets of Parent. Therefore, rather than Subsidiary being the cash-generating unit for the purposes of impairment testing, Subsidiary becomes part of a larger cash-generating unit, Z. Other cash-generating units of Parent are also expected to benefit from the synergies of the combination. Therefore, goodwill related to those synergies, in the amount of CU500, has been allocated to those other cash-generating units. Z's goodwill related to previous business combinations is CU800.

IE68G Because Z includes goodwill within its carrying amount, both from Subsidiary and from previous business combinations, it must be tested for impairment annually, or more frequently if there is an indication that it might be impaired (see paragraph 90 of FRS 36).

### Testing Subsidiary for impairment

IE68H At the end of 20X3, Parent determines that the recoverable amount of cash-generating unit Z is CU3,300. The carrying amount of the net assets of Z, excluding goodwill, is CU2,250.

Schedule 3. Testing Z for impairment at the end of 20X3

<i>End of 20X3</i>	<i>Goodwill</i>	<i>Net identifiable assets</i>	<i>Total</i>
	CU	CU	CU
Carrying amount	1,250	2,250	3,500
Recoverable amount			3,300
Impairment loss			200

### Allocating the impairment loss

IE68I In accordance with paragraph 104 of FRS 36, the impairment loss of CU200 is allocated to the assets in the unit by first reducing the carrying amount of goodwill. Therefore, the full amount of impairment loss of CU200 for cash-generating unit Z is allocated to the goodwill. In accordance with paragraph C7 of Appendix C of FRS 36, if the partially-owned Subsidiary forms part of a larger cash-generating unit, the goodwill impairment loss would be allocated first to the parts of the cash-generating unit, Z, and then to the controlling and non-controlling interests of the partially-owned Subsidiary.

IE68J Parent allocates the impairment loss to the parts of the cash-generating unit on the basis of the relative carrying values of the goodwill of the parts before the impairment. In this example Subsidiary is allocated 36 per cent of the impairment (450/1,250). The impairment loss is then allocated to the controlling and non-controlling interests on the same basis as that on which profit or loss is allocated.

## Example 8 Allocation of corporate assets

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*In this example, tax effects are ignored.*

### Background

- IE69 Entity M has three cash-generating units: A, B and C. The carrying amounts of those units do not include goodwill. There are adverse changes in the technological environment in which M operates. Therefore, M conducts impairment tests of each of its cash-generating units. At the end of 20X0, the carrying amounts of A, B and C are CU100, CU150 and CU200 respectively.
- IE70 The operations are conducted from a headquarters. The carrying amount of the headquarters is CU200: a headquarters building of CU150 and a research centre of CU50. The relative carrying amounts of the cash-generating units are a reasonable indication of the proportion of the headquarters building devoted to each cash-generating unit. The carrying amount of the research centre cannot be allocated on a reasonable basis to the individual cash-generating units.
- IE71 The remaining estimated useful life of cash-generating unit A is 10 years. The remaining useful lives of B, C and the headquarters are 20 years. The headquarters is depreciated on a straight-line basis.
- IE72 The recoverable amount (ie higher of value in use and fair value less costs of disposal) of each cash-generating unit is based on its value in use. Value in use is calculated using a pre-tax discount rate of 15 per cent.

### Identification of corporate assets

- IE73 In accordance with paragraph 102 of FRS 36, M first identifies all the corporate assets that relate to the individual cash-generating units under review. The corporate assets are the headquarters building and the research centre.
- IE74 M then decides how to deal with each of the corporate assets:
- (a) the carrying amount of the headquarters building can be allocated on a reasonable and consistent basis to the cash-generating units under review; and
  - (b) the carrying amount of the research centre cannot be allocated on a reasonable and consistent basis to the individual cash-generating units under review.

### Allocation of corporate assets

- IE75 The carrying amount of the headquarters building is allocated to the carrying amount of each individual cash-generating unit. A weighted allocation basis is used because the estimated remaining useful life of A's cash-generating unit is 10 years, whereas the estimated remaining useful lives of B and C's cash-generating units are 20 years.

## Schedule 1. Calculation of a weighted allocation of the carrying amount of the headquarters building

<i>End of 20X0</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>Total</i>
	CU	CU	CU	CU
Carrying amount	100	150	200	450
Useful life	10 years	20 years	20 years	
Weighting based on useful life	1	2	2	
Carrying amount after weighting	100	300	400	800
Pro-rata allocation of the building	12% (100/800)	38% (300/800)	50% (400/800)	100%
Allocation of the carrying amount of the building (based on pro-rata above)	<u>19</u>	<u>56</u>	<u>75</u>	<u>150</u>
Carrying amount (after allocation of the building)	<u>119</u>	<u>206</u>	<u>275</u>	<u>600</u>

**Determination of recoverable amount and calculation of impairment losses**

- IE76 Paragraph 102 of FRS 36 requires first that the recoverable amount of each individual cash-generating unit be compared with its carrying amount, including the portion of the carrying amount of the headquarters building allocated to the unit, and any resulting impairment loss recognised. Paragraph 102 of FRS 36 then requires the recoverable amount of M as a whole (ie the smallest group of cash-generating units that includes the research centre) to be compared with its carrying amount, including both the headquarters building and the research centre.

## Schedule 2. Calculation of A, B, C and M's value in use at the end of 20X0

Year	A		B		C		M	
	<i>Future cash flows</i>	<i>Discount at 15%</i>	<i>Future cash flows</i>	<i>Discount at 15%</i>	<i>Future cash flows</i>	<i>Discount at 15%</i>	<i>Future cash flows</i>	<i>Discount at 15%</i>
	CU	CU	CU	CU	CU	CU	CU	CU
1	18	16	9	8	10	9	39	34
2	31	23	16	12	20	15	72	54
3	37	24	24	16	34	22	105	69
4	42	24	29	17	44	25	128	73
5	47	24	32	16	51	25	143	71
6	52	22	33	14	56	24	155	67
7	55	21	34	13	60	22	162	61
8	55	18	35	11	63	21	166	54
9	53	15	35	10	65	18	167	48
10	48	12	35	9	66	16	169	42
11			36	8	66	14	132	28
12			35	7	66	12	131	25
13			35	6	66	11	131	21
14			33	5	65	9	128	18
15			30	4	62	8	122	15
16			26	3	60	6	115	12
17			22	2	57	5	108	10
18			18	1	51	4	97	8
19			14	1	43	3	85	6
20			10	1	35	2	71	4
Value in use		<u>199</u>		<u>164</u>		<u>271</u>		<u>720<sup>(a)</sup></u>

- (a) It is assumed that the research centre generates additional future cash flows for the entity as a whole. Therefore, the sum of the value in use of each individual cash-generating unit is less than the value in use of the business as a whole. The additional cash flows are not attributable to the headquarters building.



## Schedule 3. Impairment testing A, B and C

<i>End of 20X0</i>	<i>A</i>	<i>B</i>	<i>C</i>
	CU	CU	CU
Carrying amount (after allocation of the building) (Schedule 1)	119	206	275
Recoverable amount (Schedule 2)	<u>199</u>	<u>164</u>	<u>271</u>
Impairment loss	<u>0</u>	<u>(42)</u>	<u>(4)</u>

IE77 The next step is to allocate the impairment losses between the assets of the cash-generating units and the headquarters building.

## Schedule 4. Allocation of the impairment losses for cash-generating units B and C

<i>Cash-generating unit</i>	<i>B</i>	<i>C</i>
	CU	CU
To headquarters building	(12)	(1) $(4 \times 75/275)$
To assets in cash-generating unit	(30)	(3) $(4 \times 200/275)$
	<u>(42)</u>	<u>(4)</u>

IE78 Because the research centre could not be allocated on a reasonable and consistent basis to A, B and C's cash-generating units, M compares the carrying amount of the smallest group of cash-generating units to which the carrying amount of the research centre can be allocated (ie M as a whole) to its recoverable amount.

## Schedule 5. Impairment testing the smallest group of cash-generating units to which the carrying amount of the research centre can be allocated (ie M as a whole)

<i>End of 20X0</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>Building</i>	<i>Research centre</i>	<i>M</i>
	CU	CU	CU	CU	CU	CU
Carrying amount	100	150	200	150	50	650
Impairment loss arising from the first step of the test	<u>–</u>	<u>(30)</u>	<u>(3)</u>	<u>(13)</u>	<u>–</u>	<u>(46)</u>
Carrying amount after the first step of the test	<u>100</u>	<u>120</u>	<u>197</u>	<u>137</u>	<u>50</u>	<u>604</u>
Recoverable amount (Schedule 2)						<u>720</u>
Impairment loss for the 'larger' cash-generating unit						<u>0</u>

IE79 Therefore, no additional impairment loss results from the application of the impairment test to M as a whole. Only an impairment loss of CU46 is recognised as a result of the application of the first step of the test to A, B and C.

## Example 9 Disclosures about cash-generating units with goodwill or intangible assets with indefinite useful lives

The purpose of this example is to illustrate the disclosures required by paragraphs 134 and 135 of FRS 36.

### Background

- IE80 Entity M is a multinational manufacturing firm that uses geographical segments for reporting segment information. M's three reportable segments are Europe, North America and Asia. Goodwill has been allocated for impairment testing purposes to three individual cash-generating units—two in Europe (units A and B) and one in North America (unit C)—and to one group of cash-generating units (comprising operation XYZ) in Asia. Units A, B and C and operation XYZ each represent the lowest level within M at which the goodwill is monitored for internal management purposes.
- IE81 M acquired unit C, a manufacturing operation in North America, in December 20X2. Unlike M's other North American operations, C operates in an industry with high margins and high growth rates, and with the benefit of a 10-year patent on its primary product. The patent was granted to C just before M's acquisition of C. As part of accounting for the acquisition of C, M recognised, in addition to the patent, goodwill of CU3,000 and a brand name of CU1,000. M's management has determined that the brand name has an indefinite useful life. M has no other intangible assets with indefinite useful lives.
- IE82 The carrying amounts of goodwill and intangible assets with indefinite useful lives allocated to units A, B and C and to operation XYZ are as follows:

	<i>Goodwill</i>	<i>Intangible assets with indefinite useful lives</i>
	CU	CU
A	350	
B	450	
C	3,000	1,000
XYZ	1,200	
Total	<u>5,000</u>	<u>1,000</u>

- IE83 During the year ending 31 December 20X3, M determines that there is no impairment of any of its cash-generating units or group of cash-generating units containing goodwill or intangible assets with indefinite useful lives. The recoverable amounts (ie higher of value in use and fair value less costs of disposal) of those units and group of units are determined on the basis of value in use calculations. M has determined that the recoverable amount calculations are most sensitive to changes in the following assumptions:

<b>Units A and B</b>	<b>Unit C</b>	<b>Operation XYZ</b>
Gross margin during the budget period (budget period is 4 years)	5-year US government bond rate during the budget period (budget period is 5 years)	Gross margin during the budget period (budget period is 5 years)
Raw materials price inflation during the budget period	Raw materials price inflation during the budget period	Japanese yen/US dollar exchange rate during the budget period
Market share during the budget period	Market share during the budget period	Market share during the budget period
Growth rate used to extrapolate cash flows beyond the budget period	Growth rate used to extrapolate cash flows beyond the budget period	Growth rate used to extrapolate cash flows beyond the budget period

- IE84 Gross margins during the budget period for A, B and XYZ are estimated by M based on average gross margins achieved in the period immediately before the start of the budget period, increased by 5 per cent per year for anticipated efficiency improvements. A and B produce complementary products and are operated by M to achieve the same gross margins.
- IE85 Market shares during the budget period are estimated by M based on average market shares achieved in the period immediately before the start of the budget period, adjusted each year for any anticipated growth or decline in market shares. M anticipates that:
- (a) market shares for A and B will differ, but will each grow during the budget period by 3 per cent per year as a result of ongoing improvements in product quality.
  - (b) C's market share will grow during the budget period by 6 per cent per year as a result of increased advertising expenditure and the benefits from the protection of the 10-year patent on its primary product.
  - (c) XYZ's market share will remain unchanged during the budget period as a result of the combination of ongoing improvements in product quality and an anticipated increase in competition.
- IE86 A and B purchase raw materials from the same European suppliers, whereas C's raw materials are purchased from various North American suppliers. Raw materials price inflation during the budget period is estimated by M to be consistent with forecast consumer price indices published by government agencies in the relevant European and North American countries.
- IE87 The 5-year US government bond rate during the budget period is estimated by M to be consistent with the yield on such bonds at the beginning of the budget period. The Japanese yen/US dollar exchange rate is estimated by M to be consistent with the average market forward exchange rate over the budget period.
- IE88 M uses steady growth rates to extrapolate beyond the budget period cash flows for A, B, C and XYX. The growth rates for A, B and XYZ are estimated by M to be consistent with publicly available information about the long-term average growth rates for the markets in which A, B and XYZ operate. However, the growth rate for C exceeds the long-term average growth rate for the market in which C operates. M's management is of the opinion that this is reasonable in the light of the protection of the 10-year patent on C's primary product.

IE89 M includes the following disclosure in the notes to its financial statements for the year ending 31 December 20X3.

*Impairment Tests for Goodwill and Intangible Assets with Indefinite Lives*

Goodwill has been allocated for impairment testing purposes to three individual cash-generating units—two in Europe (units A and B) and one in North America (unit C)—and to one group of cash-generating units (comprising operation XYZ) in Asia. The carrying amount of goodwill allocated to unit C and operation XYZ is significant in comparison with the total carrying amount of goodwill, but the carrying amount of goodwill allocated to each of units A and B is not. Nevertheless, the recoverable amounts of units A and B are based on some of the same key assumptions, and the aggregate carrying amount of goodwill allocated to those units is significant.

*Operation XYZ*

The recoverable amount of operation XYZ has been determined based on a value in use calculation. That calculation uses cash flow projections based on financial budgets approved by management covering a five-year period, and a discount rate of 8.4 per cent. Cash flows beyond that five-year period have been extrapolated using a steady 6.3 per cent growth rate. This growth rate does not exceed the long-term average growth rate for the market in which XYZ operates. Management believes that any reasonably possible change in the key assumptions on which XYZ's recoverable amount is based would *not* cause XYZ's carrying amount to exceed its recoverable amount.

*Unit C*

The recoverable amount of unit C has also been determined based on a value in use calculation. That calculation uses cash flow projections based on financial budgets approved by management covering a five-year period, and a discount rate of 9.2 per cent. C's cash flows beyond the five-year period are extrapolated using a steady 12 per cent growth rate. This growth rate exceeds by 4 percentage points the long-term average growth rate for the market in which C operates. However, C benefits from the protection of a 10-year patent on its primary product, granted in December 20X2. Management believes that a 12 per cent growth rate is reasonable in the light of that patent. Management also believes that any reasonably possible change in the key assumptions on which C's recoverable amount is based would *not* cause C's carrying amount to exceed its recoverable amount.

*Units A and B*

The recoverable amounts of units A and B have been determined on the basis of value in use calculations. Those units produce complementary products, and their recoverable amounts are based on some of the same key assumptions. Both value in use calculations use cash flow projections based on financial budgets approved by management covering a four-year period, and a discount rate of 7.9 per cent. Both sets of cash flows beyond the four-year period are extrapolated using a steady 5 per cent growth rate. This growth rate does not exceed the long-term average growth rate for the market in which A and B operate. Cash flow projections during the budget period for both A and B are also based on the same expected gross margins during the budget period and the same raw materials price inflation during the budget period. Management believes that any reasonably possible change in any of these key assumptions would *not* cause the aggregate carrying amount of A and B to exceed the aggregate recoverable amount of those units.

	<i>Operation XYZ</i>	<i>Unit C</i>	<i>Units A and B (in aggregate)</i>
Carrying amount of goodwill	CU1,200	CU3,000	CU800
Carrying amount of brand name with indefinite useful life	–	CU1,000	–
<b>Key assumptions used in value in use calculations<sup>(a)</sup></b>			
<ul style="list-style-type: none"> <li>• Key assumption</li> </ul>	<ul style="list-style-type: none"> <li>• Budgeted gross margins</li> </ul>	<ul style="list-style-type: none"> <li>• 5-year US government bond rate</li> </ul>	<ul style="list-style-type: none"> <li>• Budgeted gross margins</li> </ul>
<ul style="list-style-type: none"> <li>• Basis for determining value(s) assigned to key assumption</li> </ul>	<ul style="list-style-type: none"> <li>• Average gross margins achieved in period immediately before the budget period, increased for expected efficiency improvements.</li> <li>• Values assigned to key assumption reflect past experience, except for efficiency improvements. Management believes improvements of 5% per year are reasonably achievable.</li> </ul>	<ul style="list-style-type: none"> <li>• Yield on 5-year US government bonds at the beginning of the budget period.</li> <li>• Value assigned to key assumption is consistent with external sources of information</li> </ul>	<ul style="list-style-type: none"> <li>• Average gross margins achieved in period immediately before the budget period, increased for expected efficiency improvements.</li> <li>• Values assigned to key assumption reflect past experience, except for efficiency improvements. Management believes improvements of 5% per year are reasonably achievable.</li> </ul>
<ul style="list-style-type: none"> <li>• Key assumption</li> </ul>	<ul style="list-style-type: none"> <li>• Japanese yen/US dollar exchange rate during the budget period</li> </ul>	<ul style="list-style-type: none"> <li>• Raw materials price inflation</li> </ul>	<ul style="list-style-type: none"> <li>• Raw materials price inflation</li> </ul>
<ul style="list-style-type: none"> <li>• Basis for determining value(s) assigned to key assumption</li> </ul>	<ul style="list-style-type: none"> <li>• Average market forward exchange rate over the budget period.</li> <li>• Value assigned to key assumption is consistent with external sources of information.</li> </ul>	<ul style="list-style-type: none"> <li>• Forecast consumer price indices during the budget period for North American countries from which raw materials are purchased.</li> <li>• Value assigned to key assumption is consistent with external sources of information.</li> </ul>	<ul style="list-style-type: none"> <li>• Forecast consumer price indices during the budget period for European countries from which raw materials are purchased.</li> <li>• Value assigned to key assumption is consistent with external sources of information.</li> </ul>
<b><i>continued...</i></b>			

**...continued**

<ul style="list-style-type: none"> <li>• Key assumption</li> </ul>	<ul style="list-style-type: none"> <li>• Budgeted market share</li> </ul>	<ul style="list-style-type: none"> <li>• Budgeted market share</li> </ul>
<ul style="list-style-type: none"> <li>• Basis for determining value(s) assigned to key assumption</li> </ul>	<ul style="list-style-type: none"> <li>• Average market share in period immediately before the budget period.</li> <li>• Value assigned to key assumption reflects past experience. No change in market share expected as a result of ongoing product quality improvements coupled with anticipated increase in competition.</li> </ul>	<ul style="list-style-type: none"> <li>• Average market share in period immediately before the budget period, increased each year for anticipated growth in market share.</li> <li>• Management believes market share growth of 6% per year is reasonably achievable due to increased advertising expenditure, the benefits from the protection of the 10-year patent on C's primary product, and the expected synergies to be achieved from operating C as part of M's North American segment.</li> </ul>

(a) The key assumptions shown in this table for units A and B are only those that are used in the recoverable amount calculations for both units.