Impairment – before and after tax

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IAS 36 requires a pre-tax discount rate

► IAS 36.50:

 — Estimates of future cash flows shall not include

   a) cash inflows or outflows from financing activities; or

   b) income tax receipts or payments

► IAS 36.55

 — The discount rate (rates) shall be a pre-tax rate (rates) that reflect(s) current market assessments of

   a) the time value of money; and

   b) the risks specific to the asset for which the future cash flow estimates have not been adjusted

► Excluding financing activities makes sense and does not create particular problems

► However, how to exclude taxes in the cash flows and discount rate?

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IAS 36 BC Why pre-tax?

► BCZ84:

   — 'In principle, value in use should include the present value of the future tax cash flows..'
     ……[(in other words: post-tax)]

► 'Nevertheless it may be burdensome to estimate the effect of that component'

   — This is because need to be determined by an iterative and possibly complex computation so that value in use itself reflects a tax base equal to that value in use

► For these reasons, IASC decided to require ....a pre-tax discount rate'

   — ….post-tax burdensome….

   — ….BUT pre-tax impossible….

► Comments by field visit participants and respondents to the December 2002 ED

   — 'However, some field visit participants and respondents to the Exposure Draft stated that using pre-tax cash flows and pre-tax discount rates would be a significant implementation issue for entities

   — This is because typically an entity's accounting and strategic decision-making systems are fully integrated and use post-tax cash flows and post-tax discount rates to arrive at present value measures

   ……The board decided not to deal with this issue now…'

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What does IAS 36 say?

► When the basis used to estimate the discount rate is post-tax, that basis is adjusted to reflect a pre-tax rate (IAS 36.A20)

► Consideration of future tax cash flows (IAS 36.BCZ81)

    – Future income tax cash flows may affect recoverable amount. It is convenient to analyse future tax cash flows into two components

        ► (a) the future tax cash flows that would result from any difference between the tax base of an asset and its carrying amount, after recognition of any impairment loss

        ► (b) the future tax cash flows that would result if the tax base of the asset were equal to its recoverable amount

    – To avoid double counting the future tax consequences of the temporary differences component under (a) above should not be considered
(IAS 36.BCZ82)

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Pre-tax discount rate in the oil and gas industry

► IAS 36.56 says that the discount rate should be the return that investors would require on a similar asset

  – It should be based on a post-tax discount rate

    ► BUT: No consensus on how this should be calculated

► However, IAS 36.A17 suggests as a starting point:

  – WACC calculated using e.g. CAPM

  – The entity's incremental borrowing rate

  – Other market borrowing rates

► It seems logical that a pre-tax ust take into account oil industry's special taxes

  – Investors care about returns on investments after taxes are paid

  – Norwegian offshore oil-producing assets will typically have a higher pre-tax discount rate than onshore assets

  – Special capital allowance

► Under Section 10, the buyer does not obtain a new tax balance equal to purchase price

  – Buyer obtains seller's tax balance

  – This could have implications for impairment tests

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Pre-tax vs. post tax discount rate

► Good news (IAS 36.BCZ85)

— In theory, discounting post-tax cash flows at a post-tax discount rate and discounting pre-tax cash flows at a pre-tax discount rate should give the same result, as long as the pre-tax discount rate is the post-tax discount rate adjusted to reflect the specific amount and timing of the future tax cash flows

► Value in use = $$\sum_{t=1}^{T} \frac{CF_{post-tax,t}}{(1+r_{post-tax})^t} \quad = \quad \sum_{t=1}^{T} \frac{CF_{pre-tax,t}}{(1+r_{pre-tax})^t}$$

► Bad news

— We don't know the pre-tax discount rate

  ► It is not always the post-tax discount rate grossed up by a standard rate of tax

— In practice companies tend to use post-tax rates to discount post-tax cash flows

  ► How can we ensure that this method achieves results in line with IAS 36?

► Disclaimer: It is not entirely clear how to calculate a pre-tax discount rate in accordance with IAS 36. The following slides illustrates some of the issues. However since many of these issues are still not resolved these slides should be viewed as illustrative only

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Impairment and tax – Illustration (1)
Assumptions

▶ Value in use calculation should include tax amortisation benefit (TAB)

— Effectively negative TAB when impairment

▶ Suppose an asset was initially expected to generate a revenue of $100 in year 1

▶ Assume 10% discount rate

▶ Tax rate is 78%

▶ No special capital allowance

▶ Book value = tax basis = $68.8 (= $75.6 / 1.10) in year 0, which is fully depreciated in year 1

Cash flows	Year = 1
Revenue	$100.0
- Tax ([$100 - $68.8] x 78%)	$24.4
= Net cash flow	$75.6

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Impairment and tax – Illustration (2)
"Naive" calculation

► However, suddenly something happens, and the expected revenues fall to $40. This requires an impairment calculation

► The new expected cash flows in year 1 are now

Cash flows	Year = 1
Revenue	$40.0
- Tax ([$40 - $68.8] x 78%)	-$22.4
= Net cash flow	$62.4

► But using $56.8 as the asset value gives an incorrect balance sheet:

Assets			Liabilities & equity
Fixed asset: $62.4 / (1+10%)	$56.8		
Deferred tax asset [$68.8-$56.8]x78%	$9.4		
Total assets	$66.1	$66.1	Equity and liabilities

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Impairment and tax – Illustration (3)
Grossing up the post-tax discount rate

► But the gross up method does not quite work

- In the example from previous slide "grossing up" gives an impairment calculation:

Book value prior to impairment	$68.8
- Impairment test net NPV: $62.4 / (1+10%)	$56.8
= Net impairment	$12.0
Gross-up impairment: $12.0 / (1-78%)	$54.5

► But this leads to the impairment charge being too large

- IAS 12 requires nominal deferred tax asset

Assets		Liabilities & equity	
Fixed asset: $68.8 - $54.5	$14.3		
Deferred tax asset [$68.8-$14.3]x78%	$42.5		
Total assets	$56.8	$56.8	Equity and liabilities

Impairment and tax – Illustration (4)
Compare implicit pre-tax discount rates

► The two methods describe give a different pre-tax discount rate after impairment

	Before impairment	"Naive" calculation	"Grossing up"
Deferred tax asset	-	$9.4	$42.5
Book value of fixed asset	$68.8	$56.8	$14.3
Pre-tax cash flows at year=1	$100	$40.0	$40.0
Implicit pre-tax discount rate	45 %	-30 %	180%

► This is not in accordance with IAS 36, since it says that pre-tax cash flows should in principle be discounted by pre-tax discount rate

   — The method we use must give similar results "as if" we were doing pre-tax calculation

► The correct method should give us the same pre-tax discount rate, i.e. 10%

   — Book value (after impairment) should thus be: $40.0 / 1.453 = $27.5

► Which method can we use to obtain this?

   — Answer: The iterative method

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Impairment and tax – Illustration (5)
The iterative method

► To obtain the correct balance sheet, we use an iterative method to find the value in use that is equal to the tax basis

Cash flows	Year = 1
Revenue	$40.0
Tax ([$40 - $27.5] x 78%)	$9.7
Net cash flow	$30.3

► Correct balance sheet

Assets		Liabilities & equity	
Fixed asset	$27.5		
Deferred tax asset [$68.8-$27.5]x78%	$32.2		
Total assets	$59.7	$59.7	Equity and liabilities

► In this simple example, it is easy to spot the problem. However, in practice this may be more complicated

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Impairment and tax – Illustration (6)
The iterative method – how does it work?

► In iteration 1 , you start with the book value before impairment as the asset's tax basis, and calculate the net present value of the asset using a post-tax discount rate

► The new book value (NPV) is used as the tax basis in the next iteration

► You iterate until convergence is achieved

Iteration	Tax basis used	Calculated book value
1 ("Naive" calculation)	$ 68,8	$ 56,8
2	$ 56,8	$ 48,3
3	$ 48,3	$ 42,2
4	$ 42,2	$ 37,9
5	$ 37,9	$ 34,9
6	$ 34,9	$ 32,8
…	…	…
N	$27.5	$27.5

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Impairment - Examples

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Example (1) – Assumptions

► Purchases asset based on future EBITDA per year of $250 for 10 years

► Depreciation life

    – Accounting   10 years

    – Tax   6 years

► Tax rate 78% - no uplift

► Carrying value = Tax value = Calculated NPV

► WACC = 10%, pre-tax 30.4% calculated using goal seek (pre-tax NPV = post-tax NPV)

	Book value	Tax value		1	2	3	4	5	6	7	8	9	10
Verdi	$ 873	$ 873											
Avskrivning	$ 10	$ 6											
Utsatt skatt	-												
WACC	10,0 %												
"WACC før skatt"	30,4 %												
Skatt	78 %												
EBITDA	$ 873	$		250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250
SM avskrivn		$		145	$ 145	$ 145	$ 145	$ 145	$ 145	$ -	$ -	$ -	$ -
NOPLAT		$		105	$ 105	$ 105	$ 105	$ 105	$ 105	$ 250	$ 250	$ 250	$ 250
Skatt	78 %	$		82	$ 82	$ 82	$ 82	$ 82	$ 82	$ 195	$ 195	$ 195	$ 195
CF es		$		168	$ 168	$ 168	$ 168	$ 168	$ 168	$ 55	$ 55	$ 55	$ 55
NPV	**$ 873**												

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Example (2) – Reduction EBITDA day 1 – Method 1 – Not recommended

▶ Assume EBITDA is now $125 per year in stead of $250

▶ Obvious impairment indicator – but what is the correct impairment amount?

▶ Example below assumes unchanged tax value of the asset – gives NPV of $731

▶ Impairment amount is 142

▶ However, if we use the same pre-tax discount rate as before (30.4%), NPV would be $524 (not $731)

▶ NPV of $731 implies pre-tax discount rate of 18.1%

	Book value	Tax value										
Value	$ 873	$ 873										
Depreciation	$ 10	$ 6										
Deferred tax	-											
WACC	10,0 %											
"WACC pre-tax"	18,1 %											
Tax	78 %											
			1	2	3	4	5	6	7	8	9	10
EBITDA	$ 731	$	150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation		$	145	$ 145	$ 145	$ 145	$ 145	$ 145	$ -	$ -	$ -	$ -
NOPLAT		$	5	$ 5	$ 5	$ 5	$ 5	$ 5	$ 150	$ 150	$ 150	$ 150
Tax	78 %	$	4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 117	$ 117	$ 117	$ 117
Cash flow after tax		$	146	$ 146	$ 146	$ 146	$ 146	$ 146	$ 33	$ 33	$ 33	$ 33
NPV	**$ 731**											
Impairment	**142**											

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Example (3) – Reduction in EBITDA day 1 – Method 2 – Recommended

► Same assumptions as previous slide, but with tax value set equal to value in use (using an iterative method)

► NPV = $524 and impairment is $349

► Consistent with pre-tax discount rate of 30.4%

► Difference in impairment amount between the two methods is $349 - $142 = $207

— Related to NPV of deferred tax on impairment amount calculated using method 2

► $349 x 78% = $272

► $272/6 = $45.4

► NPV of 6 year's annuity of $45.5 per year equals $207 !

	Book value	Tax value
Value	$ 873	$ 524
Depreciation	$ 10	$ 6
Deferred tax	$ 272	
WACC	10,0 %	
"WACC pre-tax"	30,4 %	
Tax	78 %	

			1	2	3	4	5	6	7	8	9	10
EBITDA	$ 524	$	150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation		$	87	$ 87	$ 87	$ 87	$ 87	$ 87	$ -	$ -	$ -	$ -
NOPLAT		$	63	$ 63	$ 63	$ 63	$ 63	$ 63	$ 150	$ 150	$ 150	$ 150
Tax	78 %	$	49	$ 49	$ 49	$ 49	$ 49	$ 49	$ 117	$ 117	$ 117	$ 117
Cash flow after tax		$	101	$ 101	$ 101	$ 101	$ 101	$ 101	$ 33	$ 33	$ 33	$ 33
NPV	**$ 524**											
Impairment	**349**											

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Example (4) – With permanent differences - Assumptions

► Same assumptions as before, except permanent differences of $150

► NPV is $653, and pre-tax discount rate increased to 45.0%

	Book value	Tax value	Perm diff
Value	$ 653	$ 503	$ 150
Depreciation	$ 10	$ 6	
Deferred tax	$ 0		
WACC	10,0 %		
"WACC pre-tax"	45,0 %		
Tax	78 %		

			1	2	3	4	5	6	7	8	9	10
EBITDA	$ 653	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	
Tax depreciation			$ 84	$ 84	$ 84	$ 84	$ 84	$ 84	$ -	$ -	$ -	$ -
NOPLAT			$ 166	$ 166	$ 166	$ 166	$ 166	$ 166	$ 250	$ 250	$ 250	$ 250
Tax	78 %		$ 130	$ 130	$ 130	$ 130	$ 130	$ 130	$ 195	$ 195	$ 195	$ 195
Cash flow after tax			$ 120	$ 120	$ 120	$ 120	$ 120	$ 120	$ 55	$ 55	$ 55	$ 55
NPV	**$ 653**											

Impairment	-

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Example (5a) – With permanent differences - Impairment

► Same EBITDA reduction as before (from $250 to $150)

► No change in tax value gives NPV = $511 and impairment = $142 (as in previous example)

► However, the pre-tax discount rate falls to 31.4% (from 45.0%)

  — Not consistent with IAS 36?

	Book value	Tax value	Perm diff
Value	$ 653	$ 503	$ 150
Depreciation	10	6	
Deferred tax	$ 0		
WACC	10,0 %		
"WACC pre-tax"	31,4 %		
Tax	78 %		

			1	2	3	4	5	6	7	8	9	10
EBITDA	$ 511	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	
Tax depreciation		$ 84	$ 84	$ 84	$ 84	$ 84	$ 84	$ -	$ -	$ -	$ -	
NOPLAT		$ 66	$ 66	$ 66	$ 66	$ 66	$ 66	$ 150	$ 150	$ 150	$ 150	
Tax	78 %	$ 52	$ 52	$ 52	$ 52	$ 52	$ 52	$ 117	$ 117	$ 117	$ 117	
Cash flow after tax		$ 98	$ 98	$ 98	$ 98	$ 98	$ 98	$ 33	$ 33	$ 33	$ 33	
NPV	$ 511												

Impairment	142

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Example (5b) – With permanent differences - Impairment

► Same EBITDA reduction as before

► Iterative method with tax value equal to (NPV – PF) gives NPV = $304 and impairment = $349, as in previous example without permanent difference

► However, the pre-tax discount rate increases to 62.4%

 ‒ Not consistent with IAS 36?

		Book value	Tax value	Perm diff
Value		$ 653	$ 154	$ 150
Depreciation		$ 10	$ 6	
Deferred tax		$ 272		
WACC		10,0 %		
"WACC pre-tax"		62,4 %		
Tax		78 %		

		1	2	3	4	5	6	7	8	9	10
EBITDA	$ 304	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation		$ 26	$ 26	$ 26	$ 26	$ 26	$ 26	$ -	$ -	$ -	$ -
NOPLAT		$ 124	$ 124	$ 124	$ 124	$ 124	$ 124	$ 150	$ 150	$ 150	$ 150
Tax	78 %	$ 97	$ 97	$ 97	$ 97	$ 97	$ 97	$ 117	$ 117	$ 117	$ 117
Cash flow after tax		$ 53	$ 53	$ 53	$ 53	$ 53	$ 53	$ 33	$ 33	$ 33	$ 33
NPV	**$ 304**										

Impairment	**349**

Example (5c) – With permanent differences - Impairment

▶ Using the same pre-tax discount rate as before reduction in EBITDA (45%) gives NPV = $392

▶ We can find this with a post-tax calculation by assuming pro rata reduction in tax value and permanent differences following the impairment

  – $392 / $653 = 60%

  – $301 / $503 = 60%

  – $90   / $150 = 60%

		Book value		Tax value		Perm diff				
Value	$	653	$	301	$	90				
Depreciation		10		6						
Deferred tax	$	204								
WACC		10,0 %								
"WACC pre-tax"		45,0 %								
Tax		78 %								

			1	2	3	4	5	6	7	8	9	10
EBITDA	$	392	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation			$ 50	$ 50	$ 50	$ 50	$ 50	$ 50	$ -	$ -	$ -	$ -
NOPLAT			$ 100	$ 100	$ 100	$ 100	$ 100	$ 100	$ 150	$ 150	$ 150	$ 150
Tax	78 %		$ 78	$ 78	$ 78	$ 78	$ 78	$ 78	$ 117	$ 117	$ 117	$ 117
Cash flow after tax			$ 72	$ 72	$ 72	$ 72	$ 72	$ 72	$ 33	$ 33	$ 33	$ 33
NPV	**$**	**392**										
Impairment		**262**										

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Example (6) – No tax balance - Assumptions

► Same assumptions as before, except tax value is now equal to zero

► New NPV (and carrying value) is $354 and pre-tax discount rate increases to 99.6% !

	Book value	Tax value	Perm diff										
Value	$ 354	$ -	$ 354										
Depreciation	$ 10	$ 6											
Deferred tax	$ 0												
WACC	10,0 %												
"WACC pre-tax"	99,6 %												
Tax	78 %												
				1	2	3	4	5	6	7	8	9	10
EBITDA	$ 354			$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250
Tax depreciation				$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NOPLAT				$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250
Tax	78 %			$ 195	$ 195	$ 195	$ 195	$ 195	$ 195	$ 195	$ 195	$ 195	$ 195
Cash flow after tax				$ 55	$ 55	$ 55	$ 55	$ 55	$ 55	$ 55	$ 55	$ 55	$ 55
NPV	**$ 354**												

Impairment	**-**

Example (7) – No tax balance - Impairment

► Same EBITDA reduction as before

► Obviously, a pro rata reduction of tax balance and permanent difference now reduces only the permanent difference

► This gives impairment = $142

	Book value	Tax value	Perm diff
Value	$ 354	$ -	$ 354
Depreciation	10	6	
Deferred tax	$ 0		
WACC	10,0 %		
"WACC pre-tax"	99,5 %		
Tax	78 %		

		1	2	3	4	5	6	7	8	9	10
EBITDA	$ 213	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
NOPLAT		$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax	78 %	$ 117	$ 117	$ 117	$ 117	$ 117	$ 117	$ 117	$ 117	$ 117	$ 117
Cash flow after tax		$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33	$ 33
NPV	**$ 213**										

Impairment	**142**

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Example (8a) – With temporary differences

► Same assumptions at date 0 as in Example 1

	Book value	Tax value										
Value	$ 873	$ 873										
Depreciation	10	6										
Deferred tax	$ -0											
WACC	10,0 %											
"WACC pre-tax"	30,4 %											
Tax	78 %											
			1	2	3	4	5	6	7	8	9	10
EBITDA	$ 873	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250
Tax depreciation		$ 146	$ 146	$ 146	$ 146	$ 146	$ 146	$ -	$ -	$ -	$ -
NOPLAT		$ 105	$ 105	$ 105	$ 105	$ 105	$ 105	$ 250	$ 250	$ 250	$ 250
Tax	78 %	$ 82	$ 82	$ 82	$ 82	$ 82	$ 82	$ 195	$ 195	$ 195	$ 195
Cash flow after tax		$ 168	$ 168	$ 168	$ 168	$ 168	$ 168	$ 55	$ 55	$ 55	$ 55
NPV	**$ 873**											

Impairment	**-**

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Example (8a) – With temporary differences

► Assume that year 3 has passed. Book value is $611 ($873-$87x3) and tax value is $438 ($873-$146x3). Deferred tax is $135

► To avoid double-counting (IAS 36.BCZ82), in this example tax basis for depreciation equals value in use

► However, using a 10% post-tax discount rate now gives a pre-tax rate of 25.6%

  – This is due to changes in timing of tax depreciation compared to year 0

  – Is it reasonable that these timing changes should affect the pre-tax discount rate?

	Book value	Tax value	Tax basis
Value	$ 611	$ 438	$ 873
Depreciation	7	6	
Deferred tax	$ 135		
WACC	10,0 %		
"WACC pre-tax"	25,6 %		
Tax	78 %		

			1	2	3	4	5	6	7
EBITDA	$ 873	$	250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250
Tax depreciation		$	291	$ 291	$ 291	$ -	$ -	$ -	$ -
NOPLAT		$	-41	$ -41	$ -41	$ 250	$ 250	$ 250	$ 250
Tax	78 %	$	-32	$ -32	$ -32	$ 195	$ 195	$ 195	$ 195
Cash flow after tax		$	282	$ 282	$ 282	$ 55	$ 55	$ 55	$ 55
NPV	**$ 873**								
Impairment	**-**								

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Example (8b) – With temporary differences

	Book value	Tax value	Tax basis
Value	$ 611	$ 438	$ 523
Depreciation	7	6	
Deferred tax	$ 135		
WACC	10,0 %		
"WACC pre-tax"	25,6 %		
Tax	78 %		

		1	2	3	4	5	6	7
EBITDA	$ 523	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation		$ 174	$ 174	$ 174	$ -	$ -	$ -	$ -
NOPLAT		$ -24	$ -24	$ -24	$ 150	$ 150	$ 150	$ 150
Tax	78 %	$ -19	$ -19	$ -19	$ 117	$ 117	$ 117	$ 117
Cash flow after tax		$ 169	$ 169	$ 169	$ 33	$ 33	$ 33	$ 33
NPV	**$ 523**							

Impairment	**88**

	Book value	Tax value	Tax basis
Value	$ 611	$ 438	$ 438
Depreciation	7	6	
Deferred tax	$ 135		
WACC	10,0 %		
"WACC pre-tax"	31,5 %		
Tax	78 %		

		1	2	3	4	5	6	7
EBITDA	$ 466	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation		$ 146	$ 146	$ 146	$ -	$ -	$ -	$ -
NOPLAT		$ 4	$ 4	$ 4	$ 150	$ 150	$ 150	$ 150
Tax	78 %	$ 3	$ 3	$ 3	$ 117	$ 117	$ 117	$ 117
Cash flow after tax		$ 147	$ 147	$ 147	$ 33	$ 33	$ 33	$ 33
NPV	**$ 466**							

Impairment	**145**

► Let EBITDA fall to $150 (as in previous examples)

► Iterative method gives impairment = $88 (net after-tax $19)

► Capping the tax basis at the actual tax value gives a impairment of $145 (net after-tax $32)

   — Pre-tax discount rate increases to 31.5%

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Example (8c) – With temporary differences

	Book value	Tax value	Tax basis
Value	$ 611	$ 438	$ 611
Depreciation	7	6	
Deferred tax	$ 135		
WACC	10,0 %		
"WACC pre-tax"	37,7 %		
Tax	78 %		

			1	2	3	4	5	6	7
EBITDA	$ 695	$	250	$ 250	$ 250	$ 250	$ 250	$ 250	$ 250
Tax depreciation		$	204	$ 204	$ 204	$ -	$ -	$ -	$ -
NOPLAT		$	46	$ 46	$ 46	$ 250	$ 250	$ 250	$ 250
Tax	78 %	$	36	$ 36	$ 36	$ 195	$ 195	$ 195	$ 195
Cash flow after tax		$	214	$ 214	$ 214	$ 55	$ 55	$ 55	$ 55
NPV	**$ 695**								

Impairment	**-**

► Arguably, it may be more reasonable to set maximum tax basis equal to the actual tax value plus temporary differences

   — This increases the pre-tax discount rate to 37.7%

	Book value	Tax value	Tax basis
Value	$ 611	$ 438	$ 523
Depreciation	7	6	
Deferred tax	$ 135		
WACC	10,0 %		
"WACC pre-tax"	25,6 %		
Tax	78 %		

			1	2	3	4	5	6	7
EBITDA	$ 523	$	150	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
Tax depreciation		$	174	$ 174	$ 174	$ -	$ -	$ -	$ -
NOPLAT		$	-24	$ -24	$ -24	$ 150	$ 150	$ 150	$ 150
Tax	78 %	$	-19	$ -19	$ -19	$ 117	$ 117	$ 117	$ 117
Cash flow after tax		$	169	$ 169	$ 169	$ 33	$ 33	$ 33	$ 33
NPV	**$ 523**								

Impairment	**88**

► However, the iterative method now does not give the same pre-tax discount rate as before impairment

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Resources

▶ www.ey.com/ifrs

   — IFRS Developments Issue 2

   — Sector publications

▶ International GAAP
(January 2012)

▶ Disclosure checklist

▶ Good Group Illustrative
Financial Statements

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Appendix – IAS 36

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50 Estimates of future cash flows shall not include:
   (a)   cash inflows or outflows from financing activities; or
   (b)   income tax receipts or payments.

51   Estimated future cash flows reflect assumptions that are consistent with the way the discount rate is determined. Otherwise, the effect of some assumptions will be counted twice or ignored. Because the time value of money is considered by discounting the estimated future cash flows, these cash flows exclude cash inflows or outflows from financing activities. Similarly, because the discount rate is determined on a pre-tax basis, future cash flows are also estimated on a pre-tax basis.

Discount rate

55   The discount rate (rates) shall be a pre-tax rate (rates) that reflect(s) current market assessments of: (a)   the time value of money; and (b)   the risks specific to the asset for which the future cash flow estimates have not been adjusted.

56   A rate that reflects current market assessments of the time value of money and the risks specific to the asset is the return that investors would require if they were to choose an investment that would generate cash flows of amounts, timing and risk profile equivalent to those that the entity expects to derive from the asset. This rate is estimated from the rate implicit in current market transactions for similar assets or from the weighted average cost of capital of a listed entity that has a single asset (or a portfolio of assets) similar in terms of service potential and risks to the asset under review. However, the discount rate(s) used to measure an asset's value in use shall not reflect risks for which the future cash flow estimates have been adjusted. Otherwise, the effect of some assumptions will be double-counted.

IAS 36 BC on tax

BCZ81

Future income tax cash flows may affect recoverable amount. It is convenient to analyse future tax cash flows into two components: (a) the future tax cash flows that would result from any difference between the tax base of an asset (the amount attributed to it for tax purposes) and its carrying amount, after recognition of any impairment loss. Such differences are described in IAS 12 *Income Taxes* as 'temporary differences'. (b) the future tax cash flows that would result if the tax base of the asset were equal to its recoverable amount.

BCZ82

For most assets, an enterprise recognises the tax consequences of temporary differences as a deferred tax liability or deferred tax asset in accordance with IAS 12. Therefore, to avoid double-counting, the future tax consequences of those temporary differences—the first component referred to in paragraph BCZ81—are not considered in determining recoverable amount (see further discussion in paragraphs BCZ86–BCZ89).

BCZ83

The tax base of an asset on initial recognition is normally equal to its cost. Therefore, net selling price22 implicitly reflects market participants' assessment of the future tax cash flows that would result if the tax base of the asset were equal to its recoverable amount. Therefore, no adjustment is required to net selling price to reflect the second component referred to in paragraph BCZ81.

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IAS 36 BC Why pre-tax?

BCZ84

In principle, value in use should include the present value of the future tax cash flows that would result if the tax base of the asset were equal to its value in use—the second component referred to in paragraph BCZ81. Nevertheless it may be burdensome to estimate the effect of that component. This is because: (a) to avoid double-counting, it is necessary to exclude the effect of temporary differences; and (b) value in use would need to be determined by an iterative and possibly complex computation so that value in use itself reflects a tax base equal to that value in use. For these reasons, IASC decided to require an enterprise to determine value in use by using pre-tax future cash flows and, hence, a pre-tax discount rate.

Determining a pre-tax discount rate

BCZ85

In theory, discounting post-tax cash flows at a post-tax discount rate and discounting pre-tax cash flows at a pre-tax discount rate should give the same result, as long as the pre-tax discount rate is the post-tax discount rate adjusted to reflect the specific amount and timing of the future tax cash flows. The pre-tax discount rate is not always the post-tax discount rate grossed up by a standard rate of tax.

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IAS 36 BC

Interaction with IAS 12

BCZ86 IAS 36 requires that recoverable amount should be based on present value calculations, whereas under IAS 12 an enterprise determines deferred tax assets and liabilities by comparing the carrying amount of an asset (a present value if the carrying amount is based on recoverable amount) with its tax base (an undiscounted amount).

BCZ87 One way to eliminate this inconsistency would be to measure deferred tax assets and liabilities on a discounted basis. In developing the revised version of IAS 12 (approved in 1996), there was not enough support to require that deferred tax assets and liabilities should be measured on a discounted basis. IASC believed there was still not consensus to support such a change in existing practice. Therefore, IAS 36 requires an enterprise to measure the tax effects of temporary differences using the principles set out in IAS 12.

BCZ88 IAS 12 does not permit an enterprise to recognise certain deferred tax liabilities and assets. In such cases, **some believe that the value in use of an asset, or a cash-generating unit, should be adjusted to reflect the tax consequences of recovering its pre-tax value in use. For example, if the tax rate is 25 per cent, an enterprise must receive pre-tax cash flows with a present value of 400 in order to recover a carrying amount of 300.**

BCZ89 **IASC acknowledged the conceptual merit of such adjustments but concluded that they would add unnecessary complexity. Therefore, IAS 36 neither requires nor permits such adjustments.**

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