

# Chapter 21

## **Further aspects of capital expenditure decisions**

# Income taxes and capital expenditure analysis

- ◆ In profit-seeking firms income taxes are usually payable
  - ▲ Taxation payments are cash flows
  - ▲ Taxation implication must be considered in any cash flows arising from a capital expenditure proposal

# After-tax cash flows

- ◆ After-tax cash flows

- ▲ Cash flows after all the tax implications have been taken into account

incremental sales revenue  $\times (1 - \text{tax rate})$   
net of cost of goods sold

*continued*

# After-tax cash flows

- ◆ Tax effect of an increase in sales
  - ▲ Consider incremental revenue and costs rising from a capital expenditure decision

Incremental sales revenue	\$110 000
Incremental expenses (cost of goods sold)	<u>(60 000)</u>
Incremental gross profit	\$50 000
Incremental income tax, $\$50\,000 \times 33\%$	<u>(16 500)</u>
After-tax cash flow (net inflow after taxes)	<u><u>\$33 500</u></u>

*continued*

# After-tax cash flows

- ◆ Tax effect of incremental cash inflow

incremental expense  $\times (1 - \text{tax rate})$

Incremental expense	\$30 000
Reduction in income tax, \$30 000 $\times$ 33%	<u>(9 900)</u>
After-tax cash flow (net outflow after taxes)	<u><u>\$20 100</u></u>

*continued*

# After-tax cash flows

- ◆ Non-cash expenses
  - ▲ Such as depreciation
  - ▲ Are not cash flows
  - ▲ Can produce tax savings and, hence, savings in cash outflows

Decrease in income tax = non - cash expense x tax rate

*continued*

# After-tax cash flows

- ◆ Some cash flows do not appear on the profit statement in the same period in which they occur
  - ▲ Purchase of a depreciable asset is a cash outflow in the period of purchase, but not an expense of the current period
  - ▲ Cash outflows from purchase have no direct tax consequences

*continued*



## EXHIBIT 21.1 Net present value analysis with after-tax cash flows

High Country Department Stores Purchase of Delivery Truck						
Cash flows	Time 0	1	2	3	4	5
Acquisition cost	\$(40 000)					
After-tax cash flow from additional sales \$50 000 × (1 – 0.33)		33 500	33 500	33 500	33 500	33 500
After-tax cash flow from additional wages \$30 000 × (1 – 0.33)		(20 100)	(20 100)	(20 100)	(20 100)	(20 100)
Cash flow effect of depreciation \$8000 × 0.33		2 640	2 640	2 640	2 640	2 640
Total cash flow after tax	\$(40 000)	16 040	16 040	16 040	16 040	16 040
× discount factor @ 12%	× 1.000	× 0.893	× 0.797	× 0.712	× 0.636	× 0.567
Present value after tax	<u>\$(40 000)</u>	<u>\$14 324</u>	<u>\$12 784</u>	<u>\$11 420</u>	<u>\$10 201</u>	<u>\$9 095</u>
Net present value \$17 824						

*continued*



# After-tax cash flows

- ◆ Timing of tax payments
  - ▲ Cash flows resulting from income taxes do not occur in the same year as the before-cash flows
- ◆ Timing of cash flows
  - ▲ Cash flows from a proposal are not always recognised as revenue or expenses in the same year
  - ▲ Slight timing differences are difficult to include in a capital expenditure analysis

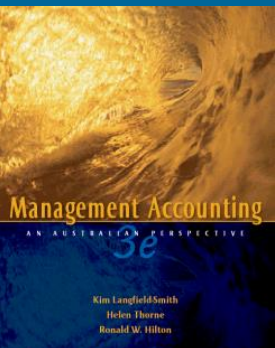
# Depreciation

- ◆ Australian tax laws allow two methods of depreciation
  - ▲ Straight-line (or prime cost)
  - ▲ Diminishing value, based on written-down value of the asset
- ◆ The method used will affect the after-tax cash flow projections

*continued*

# Depreciation

- ◆ Taxation versus accounting depreciation
- ◆ The impact on cash flows of a capital expenditure project will result from taxation depreciation, not accounting depreciation



# Profit and loss on disposal

- ◆ Profits or losses on disposal of assets have tax effects and, hence, affect cash flows
  - ▲ Use the book value resulting from *taxation depreciation* to calculate profit/loss on disposal

*continued*

# Profit and loss on disposal

- ◆ Profit on disposal

Cash inflow: proceeds from sale	\$5000
Cash outflow: incremental income tax due to the profit on disposal, $\$1000 \times 33\%$	<u>(330)</u>
Net cash flow	<u><u>\$4670</u></u>

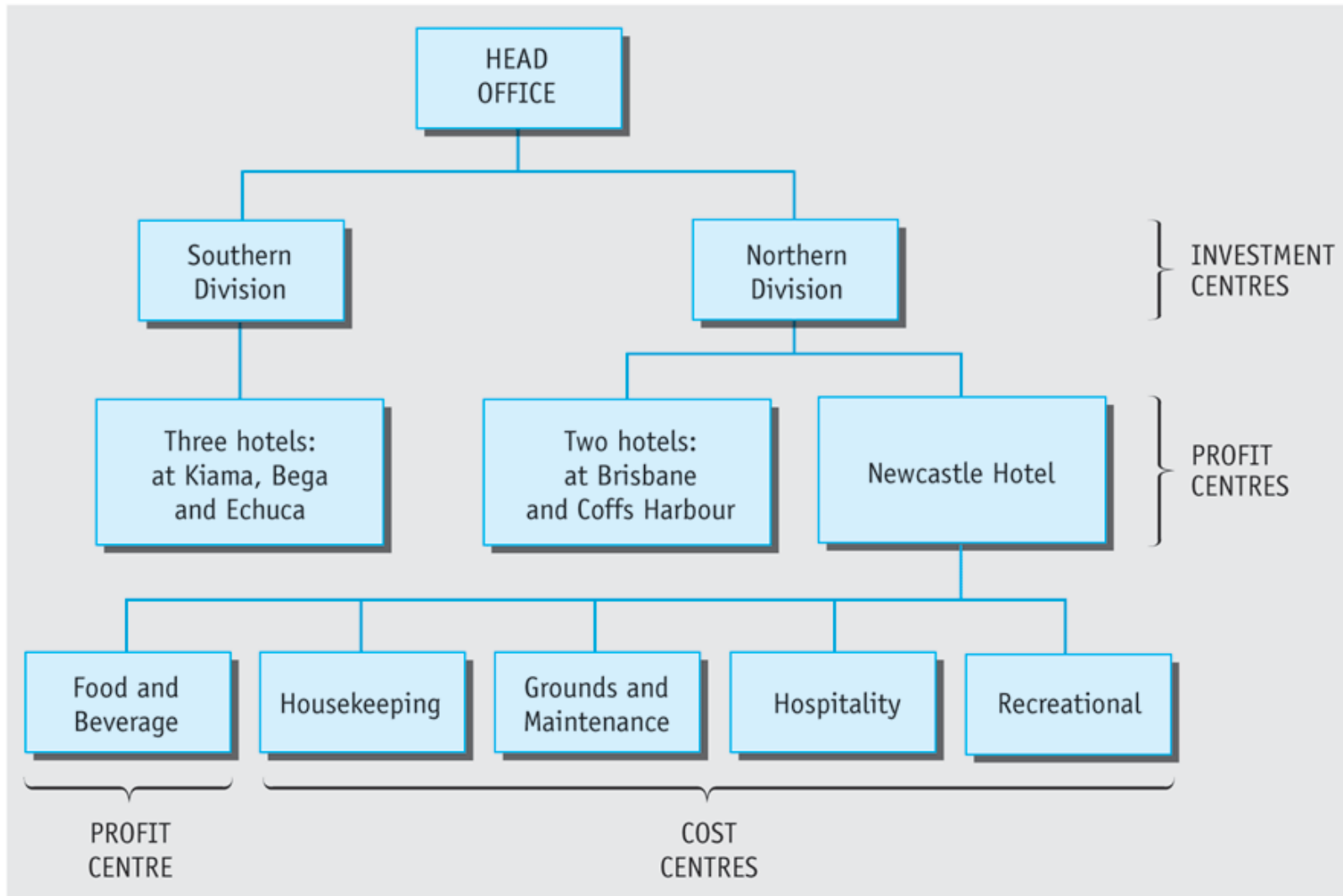
# Profit and loss on disposal

- ◆ Loss on disposal

Cash inflow: proceeds from sale	\$3200
Reduced cash outflow: reduction in income tax due to the loss, $\$800 \times 33\%$	<u>264</u>
Total cash flow	<u><u>\$3464</u></u>



## EXHIBIT 12.2 Organisation chart for Byron Bay Hotels Group



# Profit and loss on disposal

- ◆ Investment allowances also affect cash flows
  - ▲ One-off taxation deductions that businesses receive in the year of purchase of an asset

NPV of the proposal to purchase new forklift (from Exhibit 21.2)	\$928
Plus Reduction in taxation due to investment allowance $(\$12\,000 \times 10\%) \times 0.33$	<u>396</u>
NPV of proposal, after allowing for tax effect of investment allowance	<u><u>\$1324</u></u>

# Investment in working capital

- ◆ Working capital
  - ▲ The excess of current assets over current liabilities
  - ▲ Often increases as the result of higher balances in accounts receivable or inventory necessary to support a capital investment project
  - ▲ Such increases are cash outflows and should be included in an analysis or cash flows

**EXHIBIT 21.3** Net present value analysis with investment in working capital

**High Country Department Stores  
Contract for 'Back to the Gold Rush' Festival**

**(A) Data for illustration**

Annual sales revenue from T-shirts and mementos	\$25 000
Annual costs	12 000
Annual contract fee to city	3 000
Investment in working capital (time 0)	2 000
Release of working capital (end of year 3)	2 000
Tax rate	33%
After-tax required rate of return	12%

**(B) Discounted cash flow analysis**

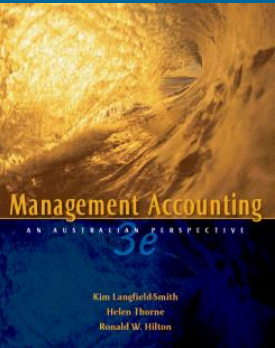
Investment in working capital (time 0)		\$(2 000)
Release of working capital:		
Working capital released (end of year 3)	\$2 000	
Discount factor ( $n = 3, r = 0.12$ )	$\times 0.712^*$	
Present value of working capital released	1 424	
Annual revenue and expenses:		
Sales revenue	\$25 000	
Costs	(12 000)	
Contract fee	(3 000)	
Before-tax annual cash flow	10 000	
$\times (1 - \text{tax rate})$	$\times 0.67$	
After-tax annual cash flow	6 700	
$\times$ annuity discount factor ( $n = 3, r = 0.12$ )	$\times 2.402^\dagger$	
Present value of after-tax annual cash flow	16 093	
Net present value of contract proposal		<u>\$15 517</u>

\* From Table 3 in Part 2 of the Appendix to Chapter 20

† From Table 4 in Part 2 of the Appendix to Chapter 20

# After-tax cash flows for other capital analysis techniques

- ◆ Pay back period
  - ▲ Initial investment/annual after-tax cash inflow
- ◆ Accounting rate of return
  - ▲ Average annual profit after-tax from project/initial investment



# Ranking investment projects

- ◆ Most firms have limited resources to invest in potentially profitable projects
- ◆ NPV and IRR may yield different ranking for alternative proposals
  - ▲ Cannot always compare the NPV's from different projects, as projects may not have the same life
  - ▲ IRR includes the reinvestment assumption



Investment proposal	Cash outflow time 0	After-tax cash inflows		Present value of inflows (12%)	Net present value	Internal rate of return
		years 1–6	years 7–10			
A (Sovereign Hill)	\$(54 450)	\$14 000	—	\$57 554	\$3 104	14%
B (Airport)	(101 700)	19 000	\$19 000	107 350	5 650	13.3%

# Ranking of investment projects

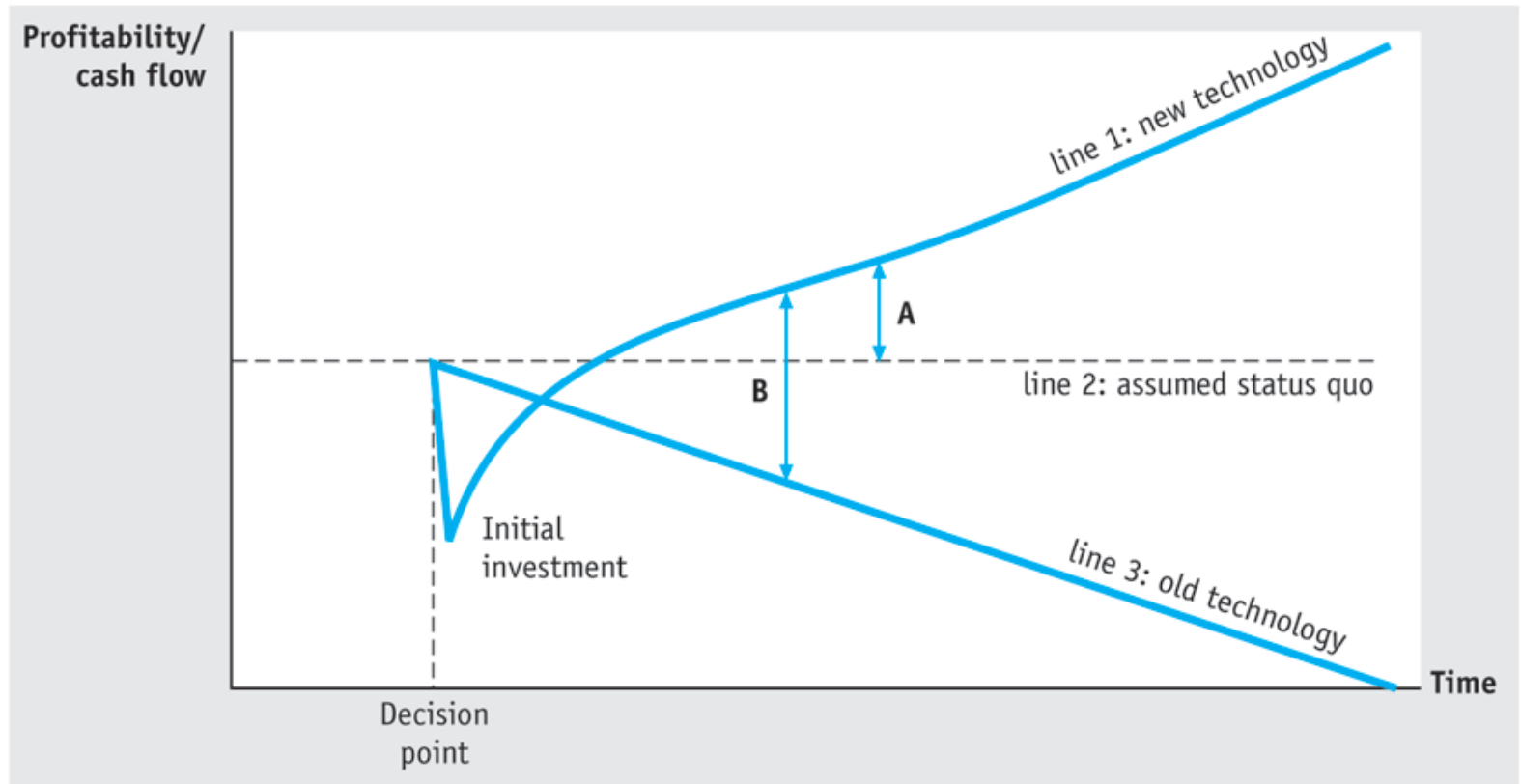
- ◆ Profitability index (or excess present value index)
  - ▲ Another method for comparing investment proposals

$$\frac{\text{present value of cash flows, exclusive of initial investment}}{\text{initial investment}}$$

# Justifying investment in advanced technologies

- ◆ High technology projects may yield negative NPVs, even when managers know it will provide a competitive edge
- ◆ Difficult to quantify strategic impact of investments
  - ▲ Relevant benefits and costs arising from investing in advanced technologies
  - ▲ Strategic implications for such investments
  - ▲ Intangible benefits derived from the investment

## EXHIBIT 21.6 The impact of *not investing* in new technology



Source: Samson, Langfield-Smith & McBride (1991)

# Limitations of conventional capital expenditure analysis

- ◆ Use of unrealistic status quo
  - ▲ Do not assume that the current cash flow situation will be maintained if the project does not ahead
  - ▲ Compare the cash flows of the new proposal to the reduction in cash flows that will occur if the project does not go ahead
- ◆ Hurdle rates too high
  - ▲ To encourage capital rationing or to hedge against uncertainty

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# Limitations of conventional capital expenditure analysis

- ◆ Time horizons too short
  - ▲ Need to include benefits over all future years to prevent bias against unfavourable projects
- ◆ Difficulty in gaining approval for large projects
  - ▲ Creates incentive for manager to promote small incremental projects rather than requesting large technology projects

*continued*



# Limitations of conventional capital expenditure analysis

- ◆ Greater uncertainty about operating cash flows
  - ▲ The complexities new software and hardware creates uncertainty
  - ▲ Inexperience of using new technologies may create difficulties in estimating cash flows

*continued*

# Limitations of conventional capital expenditure analysis

- ◆ Exclusion of benefits that are difficult to quantify
  - ▲ Synergistic effects of adopting multiple capital expenditure proposals
  - ▲ Greater flexibility in the production process
  - ▲ Shorter cycle times and reduced lead times
  - ▲ Reduction of non-value-added costs