(a) **All figures are in $ million – corrections are numbered**

Year	*0*	*1*	*2*	*3*	*4*
(error 1) Sales revenue (inflated, 8% p.a.)		24.87	42.69	61.81	36.92
(error 1) Costs (inflated, 4% p.a.)		(14.37)	(23.75)	(33.12)	(19.05)
Incremental profit		10.50	18.94	28.69	17.87
(error 2) Interest (not relevant)		n/a	n/a	n/a	n/a
(error 3) Tax (W1)		(0.50)	(3.39)	(5.44)	(3.47)
(error 4) Working capital (W2)	(4.97)	(3.57)	(3.82)	4.98	7.38
Investment/sale of machinery	(38.00)				4.00
Cash flows	(42.97)	6.43	11.73	28.23	25.78
(error 5) Discount factors (12%, W3)	1	0.893	0.797	0.712	0.636
Present values	(42.97)	5.74	9.35	20.10	16.40

Base case net present value is approximately $8.62 million.

W1 **All figures are in $ million**

Year	*0*	*1*	*2*	*3*	*4*
Incremental profit		10.50	18.94	28.69	17.87
Capital allowances		8.00	2.00	1.50	0.50
Taxable profit		2.50	16.94	27.19	17.37
Tax (20%)		0.50	3.39	5.44	3.47

W2 **All figures are in $ million**

Year	*0*	*1*	*2*	*3*	*4*
Working capital (20% of sales revenue)		4.97	8.54	12.36	7.38
Working capital required/(released)	4.97	3.57	3.82	(4.98)	(7.38)

W3 $$\beta a = \left(\frac{Ve}{(Ve + Vd\,(1-t))}\right)\beta e + \left(\frac{Vd(1-t)}{(Ve + Vd\,(1-t))}\right)\beta d$$

Assuming the beta of debt = 0, Lintu Co's asset beta =

[$128m/($128m + $31.96m × 0.8] × 1.5 approx. = 1.25

Using the CAPM $E(ri) = R_f + \beta (E(R_m - R_f))$

So the all-equity financed discount rate = 2% + 1.25 × 8% = 12%

(error 6) Financing side effects

	$'000
Issue costs 2/98 × $42.97m	(876.94)
Tax shield	
Annual tax relief =	
On the subsidised loan = $42.97m × 60% × 0.015 × 20% = $77,346	
On the rest of the loan = $42.97m × 40% × 0.04 × 20% = $137,504	
Total = 77,346 + 137,504 = $214,850m p.a. for 4 years	
This is discounted at the normal cost of debt which is 1.5% above the risk free rate of 2.5% ie = 4%.	
The present value of the tax relief annuity = 214.85 × 3.63	779.91
Annual subsidy benefit	
$42.97m × 60% × 0.025 × 80% = 515.64 (000s)	
The present value of the subsidy benefit annuity = 515.64 × 3.63	1,871.77
Total benefit of financing side effects	1,774.74

Financing the project entirely by debt would add just under $1.78 million to the value of the project, or approximately, an additional 20% to the all-equity financed project.

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Financing the project entirely by debt would add just under $1.78 million to the value of the project, or approximately, an additional 20% to the all-equity financed project.

The adjusted present value (APV) of the project is just under $10.4 million and therefore it should be accepted.

Note. In calculating the present values of the tax shield and subsidy benefits, instead of the discount factor being based on the normal borrowing/default risk of the company, alternatively, 2% or 2.5% could be used depending on the assumptions made. Credit will be given where these are used to estimate the annuity factor, where the assumption is explained.

(b) **Corrections made to the original net present value (numbers are referenced in the above calculations)**

(1) Cash flows are inflated and the nominal rate based on Lintu Co's all-equity financed rate is used (see below). Where different cash flows are subject to different rates of inflation, applying a real rate to non-inflated amounts would not give an accurate answer because the effect of inflation on profit margins is being ignored.

(2) Interest is not normally included in the net present value calculations. Instead, it is normally imputed within the cost of capital or discount rate. In this case, it is included in the financing side effects.

(3) The approach taken to exclude depreciation from the net present value computation is correct, but capital allowances need to be taken away from profit estimates before tax is calculated, reducing the profits on which tax is payable.

(4) The impact of the working capital requirement is included in the estimate as, although all the working capital is recovered at the end of the project, the flows of working capital are subject to different discount rates when their present values are calculated.

Approach taken (relates to errors 5 & 6)

The value of the project is initially assessed considering only the business risk involved in undertaking the project. The discount rate used is based on Lintu Co's asset beta which measures only the business risk of that company. Since Lintu Co is in the same line of business as the project, it is deemed appropriate to use its discount rate, instead of 11% that Burung Co uses normally.

The impact of debt financing and the subsidy benefit are then considered. In this way, Burung Co can assess the value created from its investment activity and then the additional value created from the manner in which the project is financed.

Assumptions made

It is assumed that all figures used are accurate and any estimates made are reasonable. Burung Co may want to consider undertaking a sensitivity analysis to assess this.

It is assumed that the initial working capital required will form part of the funds borrowed but that the subsequent working capital requirements will be available from the funds generated by the project. The validity of this assumption needs to be assessed since the working capital requirements at the start of years 2 and 3 are substantial.

It is assumed that Lintu Co's asset beta and all-equity financed discount rate represent the business risk of the project. The validity of this assumption also needs to be assessed. For example, Lintu Co's entire business may not be similar to the project, and it may undertake other lines of business. In this case, the asset beta would need to be adjusted so that just the project's business risk is considered.

It is also assumed that there are no adverse side-effects of taking on the extra debt eg a worsening credit rating which could impact Burung's trading position.