

1 Background

Plastix (Pty) Ltd ('Plastix') is a company that focuses on the manufacturing of plastic water bottles. Plastix was formed in 2004 by a team of young entrepreneurs who saw the future prospects of the bottled water market in South Africa. Plastix supplies a vast range of customers, which include well-known water companies. It has expanded rapidly and is now able to supply its products on a country-wide basis. Plastix has a 31 December financial year (FY) end.

Plastix has concentrated exclusively on the manufacturing of plastic products. Plastic is a highly versatile product that can be moulded into different shapes and sizes and adapted for varying levels of strength. The versatility of plastic has made it the primary material for the packaging of beverages, foods, and other products. Plastic bottle manufacturing takes place in stages and makes use of different kinds of materials. Traditionally, petroleum has been the main ingredient in plastic bottles, making the input costs sensitive to oil prices.

Plastic products are considered to be wasteful and not environmentally friendly. Although most plastic products can be recycled, very few actually are. Plastic has become one of the greatest contributors to waste worldwide. In recent years, bioplastic manufacturing has been introduced as a possible solution to this problem by manufacturing inexpensive, durable, environmentally friendly plastic products. Bioplastic manufacturing uses renewable plant-based sources such as corn, rice and potatoes. The bioplastic products can be broken down naturally within as little as three months. It is expected that the demand for bioplastic packaging will increase as consumer demand for environmentally friendly packaging products increases. The increase in the oil price and the need for companies to decrease their carbon footprint have also been driving the need for bioplastic manufacturing.

At a recent strategic planning session, the management team of Plastix made a commitment to regularly review its environmental, social, and governance (ESG) policy. As part of this initiative, it has decided that investments should aim to achieve more than just financial performance, but that wider social and environmental impacts would be considered.

2 Financing and financial performance

Plastix is financed with a mix of debt and equity and aims to achieve a debt ratio of 40% in the long term. The following information pertains to the current debt financing of Plastix:

- 12 000 non-redeemable cumulative preference shares were issued five years ago at R100 each. Dividends are paid at 10% annually in arrears. Investors would require a return of 8% on their investment if new shares were issued today. As a result of the Covid-19 pandemic and related issues in financial performance, the preference dividends had not been paid for the past two financial years (FY2021 and FY2022). The company's performance is recovering and it is expected that preference dividend payments will be resumed at the end of FY2024, by which time dividends in arrears will have been fully paid.
- A loan of R5 million was obtained at the beginning of FY2019 from the company's bank. The loan bears interest at a fixed rate of 8,5% per annum and is repayable in ten equal annual installments in arrears, starting one year post issue. If Plastix were to apply for a similar loan today, the interest rate would be 8%.

The statement of profit and loss and other comprehensive income for FY2022 and the comparative results are presented below:

Plastix (Pty) Ltd		
Statement of profit and loss and other comprehensive income		
for the year ended 31 December		
	2022	2021
	R'000	R'000
Revenue	36 179	34 702
Cost of sales	(24 343)	(23 253)
Gross profit	11 836	11 449
Operating costs	(8 543)	(8 511)
Depreciation	(424)	(464)
Operating profit	2 869	2 474
Finance income	1 526	2 088
Finance costs	(332)	(365)
Profit before taxation	4 063	4 197
Taxation	(1 112)	(1 142)
Profit for the year	2 951	3 055

3 Proposed investment

Given the pressure to be more ESG-conscious, Plastix has decided to start a new initiative by investing in bioplastic manufacturing.

The manufacturing of the bioplastic water bottles would require an investment in a new manufacturing machine. Plastix appointed a research company that specialises in feasibility studies in the packaging industry to undertake market research on the machine's availability and the spending patterns of customers, as well as on the cost of manufacturing bioplastic bottles.

Based on the outcome of the research conducted, one of the machines that is currently used would need to be replaced by a new machine that is capable of manufacturing bioplastic bottles. The cost of the new machine is R8 million and it is expected to have a useful life of five years. The machine can be delivered immediately, with production starting soon thereafter. The input materials for the bioplastic bottles are completely different from those of the original plastic bottles, but bioplastic bottles will use the same caps as the original plastic bottles.

Currently, Plastix manufactures and sells about 16 million plastic bottles annually. Based on the market research, it is expected that about 40% of current customers would stop buying the original plastic bottles and change to the new bioplastic bottles. The remaining 60% of customers would continue to buy the original plastic bottles.

The following net present value (NPV) analysis has been prepared by the financial management team of Plastix, based on the cost estimates of the new bottles and the estimated sales volumes (as at 31 December):

	Notes	2023 R'000	2024 R'000	2025 R'000	2026 R'000	2027 R'000
Sales	1	14 472				
Cost of sales	2	(8 764)				
Operating costs	3	(1 350)				
Working capital provision	4	(1 447)				
Operating profit	5	2 911	3 202	3 522	3 874	4 262
Market research	6	(40)				
Terminal value	7					51 144
Loan repayments	8	(1 925)	(1 925)	(1 925)	(1 925)	(1 925)
Net cash flows		946	1 277	1 597	1 949	53 481
Discount rate	9	17%				
NPV		32 961				

Explanatory notes

- The sales figure is based on a market-related sales price per bottle multiplied by the number of bioplastic bottles that are expected to be sold in 2023. The number of bioplastic bottles sold annually is expected to grow by 10% per annum over the next five years.
- The new machine is less labour intensive and labour cost will be reduced significantly. It is expected that the cost of sales for the bioplastic bottles will be lower than that of the original plastic bottles. The cost of sales was therefore based on the expected cost per bottle multiplied by the expected sales volumes.
- Operating costs of R1 350 000 per annum are expected to be incurred. This has been calculated as follows:

	R'000
Current factory manager	520
Additional assistant factory manager	380
Other additional anticipated operating costs	450
	1 350

- The current factory manager will oversee the new production line as well as the existing production line. An additional assistant factory manager would need to be appointed to assist him in his duties, specifically pertaining to the new bioplastic manufacturing machine.
- Working capital requirements are anticipated to amount to 10% of expected annual sales and will be recovered at the end of the period.
 - The annual operating profit has been adjusted with the expected 10% annual growth.
 - An arrangement has been made to settle the account of R80 000 for the research in two equal payments. The first payment was made on 1 January 2023 and the next payment will be made on 30 June 2023.

- 7 A terminal value was included as the manufacturing of bioplastic bottles will not end after the five-year period. The terminal value was however based on a more conservative growth rate of 8% per annum after 2027. The terminal value was calculated as follows: $(4\,262\,000 \times 1,08) / (0,17 - 0,08)$.
- 8 The supplier of the new equipment has offered a loan with special finance terms for purchasing the new equipment, at a rate of 6,5% per annum. The loan is to be repaid in five equal annual installments. The loan repayments have been included as Plastix will use this loan facility to finance the new machine.
- 9 Plastix uses a discount rate of 15% to evaluate capital investment projects. However, a premium of 2% was added to this rate to compensate for the increased risk of the new unfamiliar bioplastic manufacturing process.

4 Possible acquisition by Suntory

Plastix was recently approached by Suntory, a China-based beverage conglomerate, who would like to acquire 80% of the equity of Plastix. Details of the full offer have not been received yet, but Plastix has decided to be proactive regarding this possible acquisition by performing a review of the potential risks of being acquired by a foreign entity.

5 Additional information

- 1 The following market data was available on 31 December 2022:

R2023 government bond (redemption date 2023)	5,82%
R186 government bond (redemption date 2026)	8,69%
Equity market risk premium	7,00%

- 2 The following information is available for listed entities in South Africa that have similar operations to Plastix:

	Average for the general packaging industry	Average for plastic bottle manufacturers
Earnings before interest, tax, depreciation and amortisation (EBITDA) multiple	5,80	5,30
Unlevered beta	0,85	0,91
Debt-equity ratio	50%	45%

- 3 Assume the corporate tax rate in South Africa is 27%.
- 4 Hamada formula: $\beta_L = \beta_U [1 + (1 - t)(D/E)]$

INITIAL TEST OF COMPETENCE, JANUARY 2023

PROFESSIONAL PAPER 3

**This paper consists of two questions
Answer each question in a separate answer book**

PAPER 3 QUESTION 1 – REQUIRED		Marks	
		Sub-total	Total
(a)	Determine Plastix' weighted average cost of capital as at 31 December 2022.	22	22
(b)	Criticise the net present value analysis performed by the financial management team of Plastix. <i>Communication skills – appropriate style</i>	14 1	 15
(c)	Describe the key risks and considerations that Plastix would face if acquired by Suntory. <i>Communication skills – clarity of expression</i>	12 1	 13
Total for question 1			50