

Interest: ZARONIA, the margin and the swap

Riverbend's loan floats on ZARONIA, the rand overnight rate that replaces JIBAR. Three quarters of it is swapped to fixed. The model has to price every period from its parts, accrue it through construction, and then answer the question the credit committee asks: what does the swap buy?

01 THE RATE, BUILT UP

TABLE 5.1 Riverbend's interest rate

RATE COMPONENT	VALUE
ZARONIA (base rate)	7.10%
Lending margin	285 bps
Swap fixed rate, amortising over 15 years	8.40%
Swap credit spread	15 bps
Share of the balance swapped	75%
Blended all-in rate	11.04%

- ZARONIA, the South African Rand Overnight Index Average, is the rate banks pay each other overnight, published by the Reserve Bank and compounded over each interest period. It replaces three-month JIBAR, which is published for the last time on 31 December 2026. At 7.10% it sits just below the repo rate (7.25%).
- The margin, 285 bps, is the bank's price for the project's credit risk, fixed for the life of the loan.
- The swap fixes the rate on 75% of the balance. Riverbend pays the hedge bank a fixed 8.40% and receives ZARONIA on that share, so whatever ZARONIA does, the share costs the fixed rate, plus the margin, plus the hedge bank's own credit charge of 15 bps. The swap amortises with the loan, so it prices off the middle of the curve: ZARONIA swaps traded at 8.00% (5 years), 8.50% (10 years) and 8.78% (15 years) on 2 October 2026.

fx

$$r = h \times (\text{swap} + \text{spread} + m) + (1 - h) \times (\text{ZARONIA} + m)$$
$$0.75 \times (8.40\% + 0.15\% + 2.85\%) + 0.25 \times (7.10\% + 2.85\%) = 11.04\%$$

The workbook carries the same blend as a live formula on its Debt tab, period by period, so a reviewer can change the swap rate or the hedged share and watch every ratio move:

fx

Debt!C8

=IF(C7>0,C7*(Assumptions!\$B\$138+Assumptions!\$B\$136+Assumptions!\$B\$139)+(1-C7)*(C6+Assumptions!\$B\$136),(C6+Assumptions!\$B\$136))

Calculates to 11.038% in year 1.

The rate then meets the balance. Each year the Debt tab charges interest on what is outstanding, takes the sculpted principal, and carries the rest forward:

TABLE 5.2 The workbook's Debt tab, years 1 to 6 (R)

SENIOR TERM LOAN	Y1	Y2	Y3	Y4	Y5	Y6
Opening Balance	554 903 135	543 137 426	528 170 306	509 593 960	486 953 307	459 740 616
Interest	60 922 773	59 535 794	57 784 207	55 621 693	52 996 571	49 851 182
Principal Repayment	11 765 709	14 967 119	18 576 346	22 640 654	27 212 691	32 351 100
Debt Service	72 688 483	74 502 914	76 360 552	78 262 347	80 209 262	82 202 282
Closing Balance	543 137 426	528 170 306	509 593 960	486 953 307	459 740 616	427 389 516

Interest = (opening balance – ¼ of the year's principal) × the all-in rate; with 2 instalments a year, ¼ of the year's principal is repaid on average while interest accrues (=IF(C23>0,(C23-(\$B\$11-1)/(2*\$B\$11))*C25)*C8,0)). Year 1: (554 903 135 – ¼ × 11 765 709) × 11.0375% = 60 922 773. Debt service = interest + principal; closing = opening – principal. The principal is the engine's solved schedule (shaded).

During construction the same rate accrues on drawn debt (R41.8m of IDC by COD), with a 0.75% commitment fee on what is still undrawn.

02 WHAT THE SWAP BUYS

The credit committee's question is what happens to the loan it is approving if rates move. So the engine freezes the loan exactly as financial close set it, the principal and the sculpted repayment schedule, and moves ZARONIA only: the margin is contractual, and the swap rate was fixed when the swap was signed. Interest, tax, the reserves and the waterfall then recompute. Each shift runs twice, as structured and with the swap removed. Re-sizing the loan for each rate path would answer a different question: what a new loan could be, not what this one does.

EXHIBIT 5.3 Minimum DSCR by ZARONIA shift, debt frozen at financial close

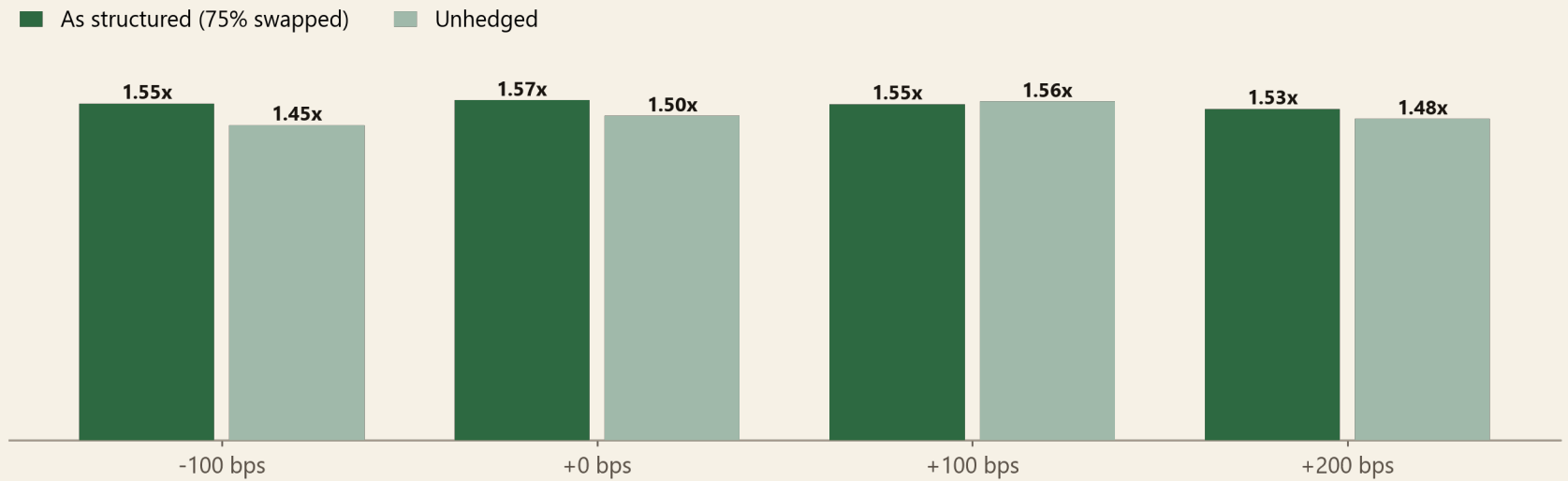


TABLE 5.4 Hedged against unhedged

ZARONIA SHIFT	MIN DSCR HEDGED	UNHEDGED	AVG DSCR HEDGED	UNHEDGED	EQUITY IRR HEDGED	UNHEDGED
-100 bps	1.55x	1.45x	1.60x	1.73x	22.1%	26.1%
+0 bps	1.57x	1.50x	1.58x	1.65x	21.6%	23.8%
+100 bps	1.55x	1.56x	1.57x	1.59x	21.1%	21.8%
+200 bps	1.53x	1.48x	1.55x	1.53x	20.6%	19.8%

Each row moves ZARONIA by the same amount for the whole life. Minimum DSCR: the lowest year's cover; average DSCR: the mean over the tenor.

At +200 bps the swap holds minimum cover at 1.53x against 1.48x unhedged, and the equity IRR at 20.6% against 19.8%. When rates fall it costs the equity: at –100 bps the unhedged deal returns 26.1% against 22.1%. That is the trade the swap makes: return for stability.

03 THE RESULT THAT LOOKS WRONG

With no shift at all, the unhedged loan is cheaper (R531m of lifetime interest against R589m) and its average cover is higher (1.65x against 1.58x). Yet its minimum DSCR is lower: 1.50x against 1.57x, in year 9.

WHY

Lower interest means more taxable income each year, so the unhedged deal uses its assessed loss faster. By year 9 it has less loss left to shelter that year's profit and pays R21.6m of tax, against R10.6m hedged. The repayment due that year was fixed at financial close and doesn't move, so cover falls to 1.50x. Interest, tax and CFADS are one calculation; a model has to link them to show it.

04 CONCLUSION

The rate is three parts and one formula, and the formula is live in the workbook. What the swap buys is measured on the loan as agreed, not on a re-sized one, because re-sculpting to each shocked curve would hide exactly the exposure being tested. Next: where each period's CFADS goes.

The waterfall: where every rand of CFADS goes

The maintenance reserve, debt service, the DSRA, lock-up.

Riverbend Solar is an illustrative case study: a fictional deal with no real counterparty. Every figure comes from one run of the engine; every exhibit is generated, none is typed.