

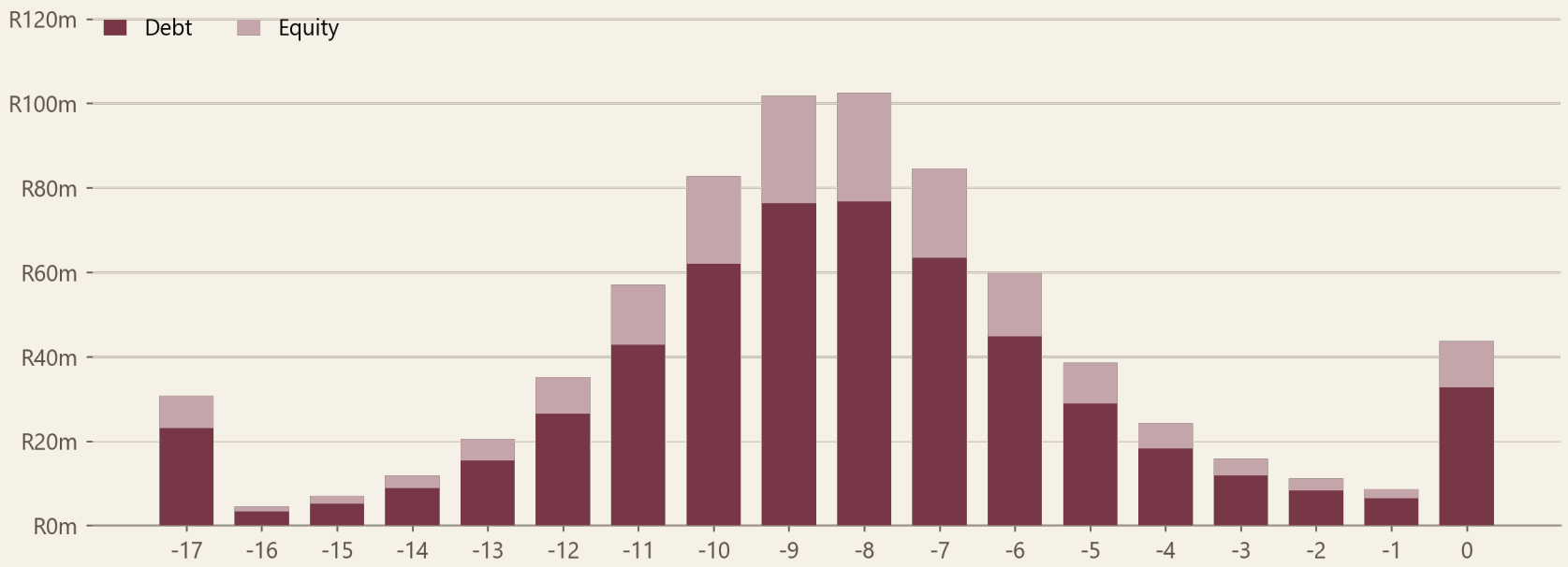
The 18 months before the first kWh

Before the plant earns a rand, the model has to answer three questions: how much money, from whom, and when. The answers set the loan at COD, the equity cheque and the IRR, and two of them are circular. This post follows Riverbend from financial close to COD.

01 HOW THE COST IS DRAWN

Riverbend's R650m capital cost is drawn over an 18-month build, from financial close on 1 September 2027 to COD on 1 March 2029. The EPC contract, the grid connection and the contingency follow an S-curve (slow mobilisation, peak installation, tail-off at commissioning); development costs are paid at financial close and owner's costs evenly. Every draw is funded 25% equity and 75% debt, pro rata, so the lender's money and the sponsor's go in together; the sponsor's undrawn commitment is backed by a guarantee or letter of credit from financial close. A lender may ask for the equity first instead; the engine runs either.

EXHIBIT 3.1 Monthly draws, financial close to COD (R m)



Peak month R99.8m. Each month's draw is dated at the month's end, counted back from COD (month 0), as the workbook's IRR Timeline tab dates it; financial close is the start of month -17.

02 WHAT THE BUILD COSTS ON TOP

The plant is not the only cost the money has to fund. The facility charges fees and interest while the plant is built, and the lender requires the debt service reserve to be full on the day repayments begin. Each is a project cost, and each is calculated as follows:

TABLE 3.2 Total project costs: what each use is and how it is calculated

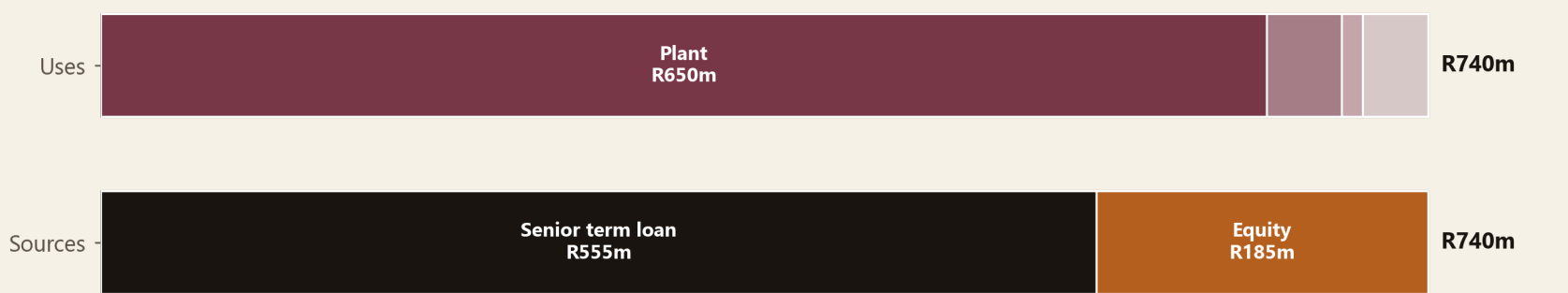
USE	HOW IT IS CALCULATED	R M
Capital cost	EPC 539.5, Grid connection 45.5, Development costs 19.5, Owner's costs 19.5, Contingency 26.0	650.0
Interest during construction	Each month, the debt drawn so far x the all-in rate (11.04%) / 12, added to the loan until COD	41.8
Arrangement fee	1.5% of the facility, paid at financial close	8.3
Commitment fee	0.75% a year on the facility not yet drawn, monthly	3.4
DSRA	Six months of the first scheduled debt service, paid in at COD	36.3
Total project costs	The base of the lender's 75% gearing limit	739.9

Lenders define project costs to include the financing costs and the reserve funding: IRENA / Terrawatt Open Solar Contracts financing term sheet; FAST Standard; S&P project finance methodology ("IDC is a project cost").

The all-in rate is what each rand of drawn debt costs. 75% of the balance is swapped to a fixed rate, so it pays the swap rate (8.40%), the hedge bank's credit spread (15 bps) and the bank's margin (285 bps); the rest floats at ZARONIA (7.10%) plus the margin. Weighted, that is 11.04%. Post 5 builds the rate up in full.

IDC and the fees depend on the size of the loan, and the size of the loan depends on the cost it funds. That loop is circular. The engine solves it by iteration and the workbook carries the solved values, so Excel shows no circular reference.

EXHIBIT 3.3 Sources and uses at COD



Uses: plant R650m, IDC R41.8m, fees R11.7m, DSRA R36.3m. Sources: senior term loan R554.9m and equity R185.0m.

The sponsor's cheque is therefore R185.0m: 25% of total project costs (R739.9m), not 25% of the R650m capital cost (R162.5m). Lenders measure gearing on everything the money funds, the financing costs and the DSRA included, so the equity funds its share of those too. Bank-funded REIPPPP projects ran at 70% to 80% debt on the same basis (Eberhard and Naude, UCT Graduate School of Business, 2017).

03 WHY THE DATES MATTER

An IRR depends on when each rand moves, not only on how many: money invested earlier has to earn its return for longer, so the same cash dated earlier gives a lower IRR. The model dates every cash flow. Each month's construction draw sits in the month it is spent, the financing costs and the DSRA at COD, and each operating year's cash at the end of that year. The workbook carries the dated timeline on its IRR Timeline tab, and the IRRs are computed on it. Its first rows, money invested shown negative:

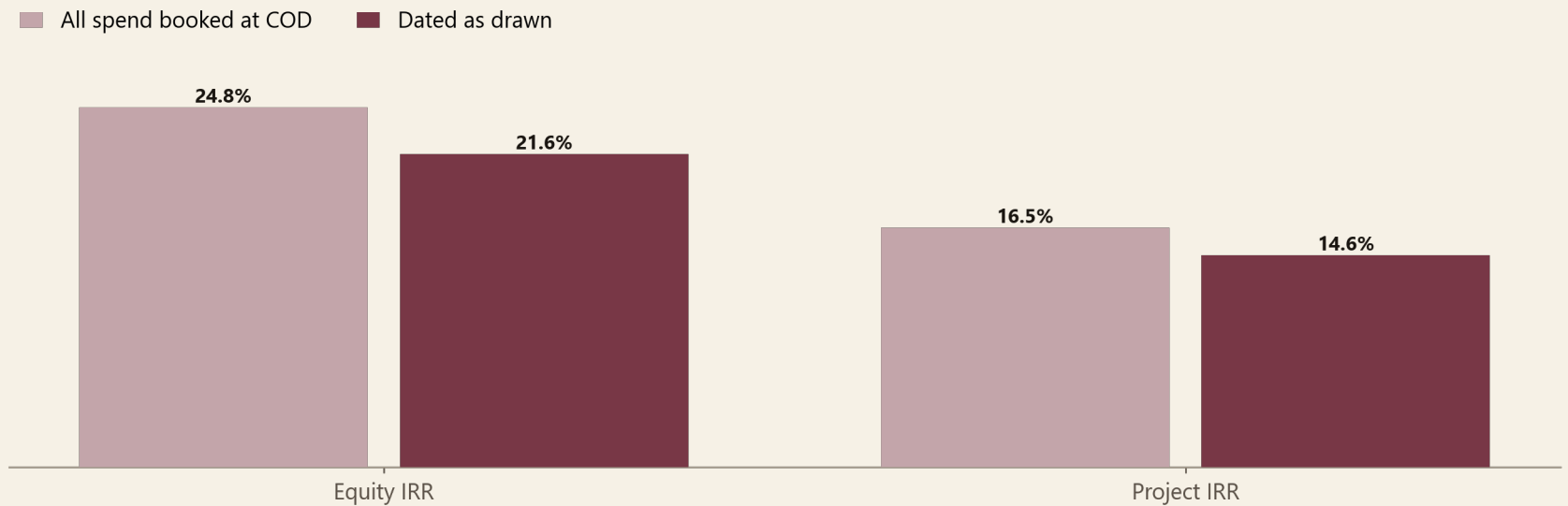
TABLE 3.4 The workbook's IRR Timeline tab

MONTH FROM COD	PRE-TAX PROJECT (R)	EQUITY (R)
-17	(22 015 346)	(10 973 729)
-16	(3 853 379)	(1 677 380)
-15	(6 407 184)	596 331
-14	(11 189 752)	(4 052 210)
-13	(19 826 169)	(7 142 685)
-12	(34 384 841)	(12 281 752)
-11	(55 981 644)	(19 681 608)
-10	(81 298 063)	(27 716 051)
-9	(99 793 621)	(32 007 714)
-8	(99 793 621)	(28 373 796)
-7	(81 298 063)	(18 365 836)
-6	(55 981 644)	(8 375 192)
-5	(34 384 841)	(2 606 909)
-4	(19 826 169)	(642 911)
-3	(11 189 752)	(466 869)
-2	(6 407 184)	(763 014)
-1	(3 853 379)	(1 054 803)
0	(2 515 346)	(10 336 893)
12	115 397 535	42 757 146
24	118 285 931	42 854 197

Shaded cells are engine-computed values written into the workbook; the rest are live Excel formulas. Month 0 is a formula: ='Cash Flow'!B46-SUM(D5:D21).

Some models book the whole build at COD instead, as if every rand were spent on the day the plant starts. The money is then treated as invested about 9 months later, on average, than it really is, and the IRR comes out higher. Exhibit 3.5 shows the same cash flows dated both ways.

EXHIBIT 3.5 The same cash flows, dated two ways



04 CONCLUSION

Dated as drawn, the equity IRR is 21.6%; booked at COD it reads 24.8%, 3.2 points higher for the same deal. Those points are a return the equity never earns, because its money is committed months before COD. On a deal priced near its floor, they can decide whether it clears its hurdle. Dating the spend, funding the financing costs and solving the IDC loop are three small mechanics; together they set the loan the next post sizes.

Sizing the loan: three tests, one answer

Gearing against P50 and P90 cash flows, and sculpting.

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.