Model review checklist, part one

Appendix B. Work down the list; anything you cannot answer is a question for whoever built the model.

Asset or scheme		**Reviewer**	
Model version		**Date**	

Question	OK?	Note
Structure		
Inputs, calculations and outputs physically separated?		
Colour discipline: blue for inputs, black for formulas?		
Any hard-coded number inside a calculation area?		
Every cash flow row a single formula copied across?		
Period basis stated, and every rate consistent with it?		
A version log, and does the file match the paper it supports?		
Checks		
Sources equal uses, to the currency unit?		
Period-one contracted rent reconciles to the rent roll?		
Occupied plus vacant equals total lettable area?		
Debt balance rolls forward in every period?		
Exit value ÷ exit income returns the stated exit yield?		
NOI margin inside the expected band, and moving with occupancy?		
Income		
Passing rent distinguished from headline and effective rent?		
Outstanding rent-free periods and stepped rents reflected?		
Indexation applied at the review date, with any cap or floor?		
Open-market reviews upward-only where the leases say so, and only there?		
Renewal probability stated and sensitised?		
Downtime plausible for the size and quality of the space?		
Existing vacancy modelled unit by unit?		
A general vacancy allowance on top of modelled frictional vacancy (a double count)?		
Cost		
Recoveries on recoverable costs only, scaled by occupancy?		
A leakage factor for caps and exclusions?		
Void costs modelled, at 15 to 30 per cent of the lost rent?		
Cost inflation applied, at least as high as rental growth?		
Property tax, insurance and any ground rent modelled separately?		
Management fees included, and gross or net of them stated?		
Capital		
Building capex consistent with the technical survey?		
Contingency on its own line?		
Fit-out and commissions driven by the lease events, not typed?		
Renewal costs included as well as new-letting costs?		
Timed to the letting date rather than the expiry date?		

Model review checklist, part two

Appendix B, continued. Any three of Chapter 16's usual errors pointing the same way is a model built to reach a conclusion rather than to find one.

Asset or scheme		**Reviewer**	
Model version		**Date**	

Question	OK?	Note
Exit		
Forward twelve months of income capitalised, not trailing?		
Model runs at least four quarters beyond the exit?		
Forward year normalised, with no unusual event?		
Exit yield justified by the asset's condition at exit?		
Disposal costs deducted?		
Inherited incentive or agreed price adjustment deducted?		
Share of present value that comes from the exit?		
Debt		
Loan sized on all three tests?		
Interest convention stated and consistent with the term sheet?		
Covenants tested every period, with a breach flag?		
A cash trap modelled on breach?		
Refinancing modelled if the hold exceeds the loan term?		
Hedging cost included, and the renewal of a cap funded?		
Prepayment or break cost at exit?		
Returns and presentation		
Unlevered and levered returns both shown?		
Periodic return annualised by compounding, not multiplication?		
IRR and multiple quoted together?		
A return attribution?		
A tornado chart ranking the drivers?		
A downside built as a coherent story, not one moved input?		
Break-evens computed: exit yield, rent, occupancy, value at covenant breach?		
Does the summary fit on one page?		

Auditing a model you did not build: two hours

Chapter 16. Look for the assumptions, not the arithmetic: the first thirty minutes on the assumptions sheet, the last thirty on the checks.

Asset or scheme		**Reviewer**	
Model version		**Date**	

Minutes	Task	Finding
0 to 10	Orient: every sheet, granularity, currency and scale, hold, conventions	
10 to 35	The assumptions sheet: sourced, plausible, consistent with each other?	
35 to 50	The rent roll: area, passing rent, expiry profile against the quoted WAULT	
50 to 75	Trace one lease end to end, through expiry, void, re-letting, incentive, commission, fit-out	
75 to 90	The debt sheet: three tests, interest convention, covenants, maturity	
90 to 105	The exit: which income, which yield, what costs, which period	
105 to 120	The checks and the sensitivity: do they exist, do they pass, what is missing?	

The twelve things usually wrong, by frequency	Found?	Effect
1. Trailing income capitalised at exit		
2. Inflation on income but not on costs		
3. Void costs missing or trivial		
4. Downtime too short		
5. Recovery rate on all costs, not scaled by occupancy		
6. Capex a flat allowance unrelated to the survey		
7. Commissions and fit-out missing, or only on new lettings		
8. Annual growth divided rather than compounded		
9. Quarterly IRR multiplied by four (it understates)		
10. Debt sized on loan to value only		
11. No covenant tests		
12. Exit yield equal to entry yield without justification		

Last question for whoever built it: what would have to be true for this to be a bad investment? Write the answer down.

Debt sizing and covenant headroom

Chapters 10 and 15. The loan is the smallest of three tests, and the binding one changes with the rate. Then compute the distance to each covenant: the lender takes control long before the equity is worthless.

Asset		**Lender**	
Term sheet date		**Prepared by**	

Test	Lender's term	Inputs	Loan it allows
Loan to value		value × maximum LTV	
Debt service cover		NOI ÷ cover ÷ (rate + amortisation)	
Debt yield		NOI ÷ minimum debt yield	
LOAN = THE SMALLEST			

Rate	Loan by LTV	Loan by cover	Loan by debt yield	Binds

Break-even	At base	Covenant	Distance from base
Exit yield at which the equity return is zero (bp)			
Fall in income at which cover is breached (%)			
Fall in income at which the debt yield is breached (%)			
Occupancy at which cover is breached			
Fall in value at which loan to value is breached (%)			
Months of liquidity at zero income			

The real risk threshold is the nearest of these, not the one you lead with.

The page that gets read

Chapter 15 and Appendix F. One tornado, one two-way table on the top two drivers, a scenario table of four columns and six rows, and the break-evens. One page.

Asset or scheme		**Reviewer**	
Model version		**Date**	

Driver	Move tested	Levered IRR low	Levered IRR high	Swing (bp)	Rank

Driver 1 \ Driver 2					

	Base	Downside	Upside	Specific risk
Return				
Multiple				
Peak equity				
Break-even				
Covenant headroom				
Exit value				

The downside is a story, not a moved input: growth negative for two to three years, renewal down 15 to 20 points, downtime six to twelve months longer, exit yield 75 to 150 bp wider, refinancing dearer. The specific risk case is the one thing about this asset that keeps you awake.

The development front page

Chapter 13. Four break-evens in the units of the risks, the three tests, and one combination, because a lender will build it if you do not.

Scheme		**Prepared by**	
Programme		**Date**	

Metric	Value	Requirement	OK?
Gross development value			
Total development cost			
Profit on cost			
Profit on value			
Development yield			
Spread to the investment yield (bp)			
Levered IRR			
Peak equity			
Residual land value at the required profit			

Break-even: profit is zero at	Value	Distance from base
A fall in gross development value of		
A build cost overrun of		
A delay, in months, of		
An exit yield of		

Test	Profit on cost	Profit	Note
Cost +5%			
Cost +10%			
Delay 3 months (finance, site costs, income)			
Delay 6 months			
Value –5%			
Value –10%			
Exit yield +25 bp			
Exit yield +50 bp			
Combination: cost +5%, delay 3 months, value –5%			

Sanity checks: capitalised interest 6 to 8 per cent of the drawn facility on a 24-month build at 7 per cent; the interest reserve and the month it runs out under the delay case.

Testing a waterfall, and what the term sheet did not say

Chapter 12. Four tests in the checks block, run every time the waterfall changes. Then list every assumption the term sheet was silent on: it is the most useful thing to hand the lawyer.

Deal or fund		**Prepared by**	
Document version		**Date**	

Test	What must hold	Result
Distributions equal cash	What is paid out equals what came in, every period	
The zero case	Profit set to zero: capital back to each, no promote	
The hurdle case	Return exactly at the first hurdle: promote zero, or exactly the catch-up	
The extreme case	Return very high: marginal split equals the top tier; sponsor share approaches the top-tier percentage	

Term sheet silent on	Assumption made
Does the preferred return compound, and how often: simple, annual, quarterly?	
Does it accrue on contributed capital or on unreturned capital?	
Do fees paid to the sponsor count towards its capital contribution?	
Is the hurdle measured before or after tax?	
Is a refinancing distribution a return of capital or of profit?	
European (whole fund) or American (deal by deal)? If American: clawback, escrow share, interim true-up?	
Are IRR hurdles computed by lookback, and verified at each break point?	

The one-page summary, and the ninety-minute test

Chapters 17 and 18. The summary is built last, for someone who has never seen the asset. In a test, complete before you refine.

Asset or scheme		**Reviewer**	
Model version		**Date**	

On the page	Done
The asset in one line: type, location, size, occupancy	
The transaction: price, price per sq m, total cost with acquisition costs	
The income: passing rent, ERV, NOI, and the three yields	
The financing: loan, LTV, rate, term, cover and debt yield at close, equity	
The returns: unlevered IRR, levered IRR, multiple, year-one cash-on-cash, hold	
The exit: date, yield, capitalised income, gross and net proceeds	
The five assumptions the answer depends on	
The three sensitivities that matter	
The recommendation, in one sentence	

Minutes	Task	Done
0 to 10	Read twice; write the three questions and the structure on paper	
10 to 20	Skeleton: assumptions, header block, empty cash flow	
20 to 45	Income and cost engine to NOI	
45 to 60	Capital, exit, unlevered return: an answer exists	
60 to 75	Debt on three tests, levered return	
75 to 85	One two-way table; three sentences of answer	
85 to 90	Checks: sources and uses, NOI margin; label everything	

Defaults when the brief is silent (state them): acquisition costs 6%, disposal 1.5%, hold 5 years, growth and inflation 2%, renewal 65%, downtime 9 months, rent-free 3 months per year of term, commission 12% (6% on renewal), capex 2% of rent, exit yield entry plus 25 bp, debt 55% LTV, 1.30x cover, 9% debt yield.