RESEARCH REPORT | 28 SEPTEMBER 2026

What Is a Solar Farm Actually Worth?

The investment economics of Grazeley Solar Farm

Research report | Applied economics, corporate finance and infrastructure modelling

Lifetime profit is not an investment return. Grazeley's value depends on generation, captured power price, lifecycle costs, financing, grid timing and the complete development package.

REPORT DATE	28 September 2026
EVIDENCE CUT-OFF	28 September 2026 report release
PRICE BASIS	Nominal GBP unless otherwise stated; benchmark bases noted in text
REFERENCE ARTICLE	Can a £16.2 Million Solar Farm Really Make £10 Million? | public link forthcoming

Current official cost	Public-evidence IRR	Break-even price	One-year timing loss
£16.2m	**7.7%**	**£81.5/MWh**	**£1.06m NPV**

Illustrative independent reconstruction from public evidence. The current detailed Council business case is confidential; model outputs are scenarios, not Council forecasts.

Executive summary

The news hook is simple: West Berkshire Council says Grazeley Solar Farm should make money, and a BBC/LDRS report puts that profit at about £10 million over a 40-year lifetime. The investment question is harder. A lifetime profit total says little about whether the project earns an adequate return on capital because it ignores when the cash arrives, how uncertain the electricity price is, how the asset is financed and what must be spent to keep it operating.[1]

The first finding is prosaic but important: the £18.6 million project cost in the triggering article is no longer the current official figure. West Berkshire Council's September 2026 FAQ gives an estimated total project cost of £16.2 million, including design, development, construction and two years of maintenance, and says £1.2 million has already been spent. The same source describes a 20MWp plant producing just under 20,000MWh per year and modelled over 30 years, with profitability expected to continue beyond that period.[2]

A transparent public-evidence case can be reconstructed, but not the Council's confidential business case. Using 19,800MWh as a transparent year-one proxy, the historic public estimate of £1.7 million annual export revenue implies a captured electricity price of about £85.9/MWh. With the current £16.2 million cost, 0.30% annual degradation, the historic £200,000 O&M estimate after the first two maintenance years, a £400,000 ten-year replacement placeholder and a 7% nominal financial discount rate, the model produces a 30-year project IRR of about 7.7% and an NPV of about £1.0 million. The break-even captured price is about £81.5/MWh.[58]

Those numbers are not a verdict on the project. They are a map of what has to be true. A downside case still produces about £1.1 million of positive undiscounted lifetime cash, yet its NPV is approximately negative £8.7 million. That is the core finance lesson: positive lifetime profit and economic value are not synonyms. The current Council itself identifies electricity prices, borrowing costs, construction costs, generation performance, discounting and local offtake as material sensitivities.[4]

The second finding is that the solar panels are only part of the asset. The Council has land, planning permission and a grid connection. Historic Council analysis for an earlier design found materially different IRRs under two connection and offtake structures, 5.62% for direct grid export and 7.60% for an AWE-linked route with potential long-term contracted offtake. That does not isolate a market price for grid access, but it demonstrates why development rights and the route to market can be as important as module costs.[6]

EVIDENCE AND RESEARCH BOUNDARY

1. Start with the claim, then fix the denominator

1.1 The public numbers have already moved

The triggering BBC/LDRS article describes an £18.6 million solar farm, around 35,000 panels, 20MW of capacity and an expected profit of about £10 million over 40 years. It also reports a December 2027 grid-connection deadline and says the project's finances remain sensitive to electricity prices, borrowing costs, construction costs, generation, discounting and local use of the power.[1]

That £18.6 million number is a warning against treating one news article as a static financial model. The Council's current FAQ, updated in September 2026, now says £16.2 million. It also discloses £1.2 million already spent on feasibility, design, investigations, grid fees, planning permission and preliminary access works. Current Council releases confirm that the Executive has approved the next stage, that planning permission and a grid connection are in place, and that an independent review by Global City Futures concluded that the scheme remains viable. The review's conclusion is reported by the Council; its detailed model is not public.[2][3]

The £10 million claim cannot therefore be audited from the material available publicly. The current price path, debt drawdown, exact borrowing rate, local-sale arrangements, lifecycle reserve schedule and full annual cash-flow profile are not disclosed. The useful task is narrower: rebuild a disciplined investment case from what is public, separate observations from assumptions, and identify which variables carry the result.

1.2 Evidence strength matters more than decimal places

Item	Model treatment	Evidence status
£16.2m total cost	Base project cost	Current Council observation
£1.2m spent	Separated from remaining £15.0m decision	Current Council observation
20MWp	Installed capacity	Current Council observation
19,800MWh	Year-one generation proxy within “just under 20,000MWh”	Model proxy from official range
£85.9/MWh	£1.7m historic revenue / 19,800MWh	Derived from historic public data
0.30% degradation	Base annual performance decay	DESNZ/Arup benchmark
£400k every 10 years	Replacement placeholder	Analyst assumption; amount not disclosed
7%	Central nominal financial discount rate	Analyst required-return case

This classification is deliberate. A sourced industry benchmark is not an observed Grazeley cost, and a transparent assumption is not improved by giving it six decimal places. The model therefore keeps evidence status next to each input and uses scenario ranges where the current business case is unavailable.

PHYSICAL ASSET AND PRODUCTION ECONOMICS

2. Twenty megawatts is not twenty megawatts every hour

2.1 Convert nameplate capacity into saleable electricity

The Council describes Grazeley as a 20MWp plant generating just under 20,000MWh per year. Using 19,800MWh as a transparent modelling proxy gives a first-year load factor of approximately 11.3%. This is the ratio of annual output to the electricity that would be generated if the plant operated at peak rating for every hour of the year.[2]

Year-one load factor 19,800 MWh / (20 MW × 8,760 hours) = 11.3%

The DESNZ/Arup study of large-scale solar reports a stakeholder range of 11.5% to 14.5%, with 12.2% as the medium assumption. Grazeley's public proxy therefore sits around the lower end of that generic range. That is a plausibility check, not a substitute for a site-specific P50 or P90 yield study. Arup explicitly notes that load factor is highly site-specific.[8]

Output also decays over time. The public-evidence case uses Arup's 0.30% medium annual degradation assumption. At that rate, 19,800MWh in year one becomes about 18,150MWh in year thirty before any additional curtailment haircut. Small annual losses matter because long-duration assets compound them for decades.

Net generation $G_t = G_1 \times (1 - d)^{(t-1)} \times (1 - c)$

2.2 Benchmark the capital intensity without pretending it is apples-to-apples

At £16.2 million for 20MWp, Grazeley's current published capital intensity is about £810/kWp. DESNZ/Arup reports 2023-real large-scale solar total capex of £526/kWp, £659/kWp and £788/kWp in its low, medium and high cases. Grazeley is therefore near the top of that generic range.[28]

The comparison needs restraint. Grazeley's figure is a 2026 nominal project estimate and the Council says it includes two years of maintenance; the Arup benchmarks are 2023 real and use a

defined developer cost boundary. The difference is informative as a scale check, not evidence that Grazeley is overpriced.

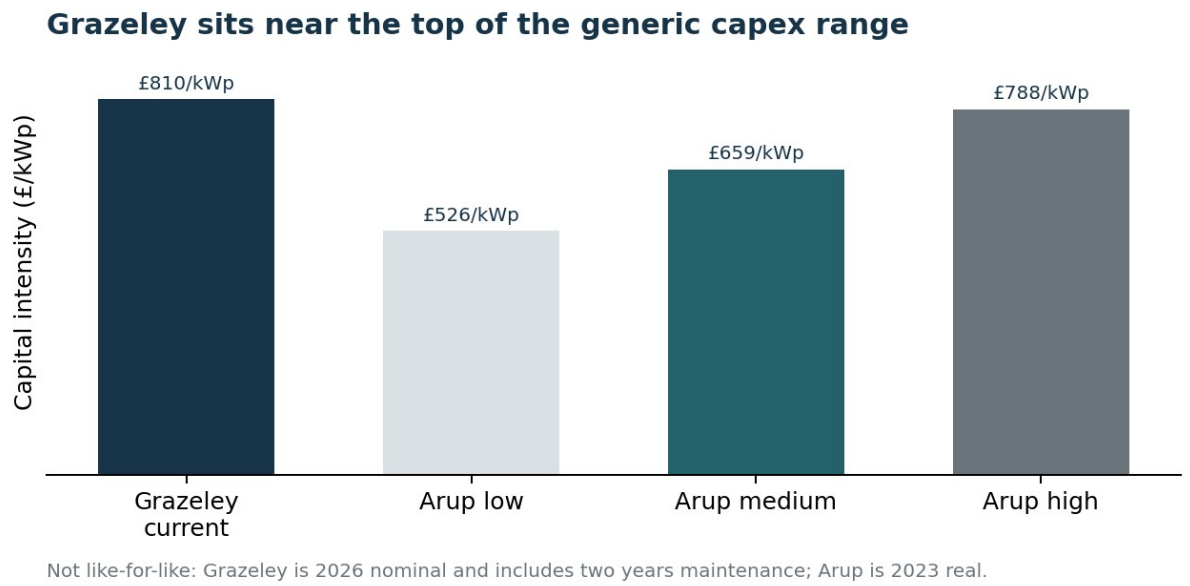

Figure 1. Capital-intensity comparison. Sources: West Berkshire Council; DESNZ/Arup. Cost bases are not directly comparable.

REVENUE AND PRICE CAPTURE

3. The project sells an hourly product, not an annual average price

3.1 Reconstruct a historic captured-price anchor

The August 2025 Council FAQ estimated roughly £1.7 million of annual revenue from exporting electricity to the grid. Dividing that figure by the 19,800MWh modelling proxy produces an implied captured price of about £85.9/MWh. This is useful because it translates a headline revenue figure into the unit that actually drives the project.[5]

Historic public price anchor £1.7m / 19,800 MWh = £85.9/MWh

It should not be mistaken for today's forecast. Solar output is concentrated in daylight hours, so a solar farm's realised or captured price can differ materially from an annual baseload or average wholesale price. As solar penetration rises, high-output hours can also become lower-price hours. A long-term contract can reduce that exposure, but the contract price, indexation, credit risk and delivery terms then matter.

3.2 Local offtake changes both price and risk

The current Council says it is exploring ways to use or sell more power locally. Historic 2022 work is more explicit: one option connected through AWE Burghfield and contemplated a

power purchase agreement. The report said AWE might take around 73% of Grazeley generation and described long-term PPAs as typically using a fixed or strike price with annual indexation. In that earlier 18MWp design, the direct-grid option produced a 5.62% IRR and the AWE-linked option 7.60%, despite the AWE route carrying higher scheme cost.[6]

Those IRRs cannot be transferred to the current 20MWp project. They do, however, make a stronger point than a generic statement about 'grid value': the commercial route to the buyer can change project return. A deterministic sensitivity illustrates the scale. If 73% of 19,800MWh earned £20/MWh more than the export alternative, first-year revenue would rise by about £289,000. That is not an assumed PPA premium; it is a unit sensitivity before fees, contract risk or financing effects.

First-year local-offtake uplift 19,800 MWh × 73% × £20/MWh = £289,080

INVESTMENT RETURNS

4. £10 million of lifetime profit is not a return metric

4.1 Build free cash flow before deciding whether the project creates value

Infrastructure returns are driven by the timing and risk of free cash flow, not by the sum of nominal profits across decades. The project model therefore starts with construction spend, then values generation after degradation and curtailment, subtracts O&M, land opportunity cost and replacement expenditure, and discounts the resulting project cash flows.

Pre-financing project cash flow FCF_t = revenue_t - O&M_t - land cost_t - replacement capex_t - construction capex_t

Financial value NPV = Σ FCF_t / (1 + r)^t; IRR is the rate at which NPV = 0

The central reconstruction is deliberately conservative in one respect: the historic £85.9/MWh price anchor is held flat in nominal terms while routine O&M rises by 2% per year. That means the real electricity price falls over time. It is also incomplete in other respects: land rent is zero in the base because the current agricultural opportunity cost is not public; tax is excluded; and £400,000 of replacement expenditure every ten years is an analyst placeholder because the Council discloses the interval but not the amount.

4.2 The public-evidence case clears 7%, but not by much

Metric	Result	Meaning
30-year full-project IRR	7.7%	Return on the disclosed £16.2m project cost under the stated operating assumptions
30-year NPV at 7%	£1.0m	Present value after applying a 7% nominal financial hurdle
Go-forward NPV	£2.2m	Same case excluding the £1.2m already spent as a sunk amount
Break-even captured price at 7%	£81.5/MWh	Constant nominal price that sets project NPV to zero
Break-even captured price at 5%	£69.4/MWh	Same economics at a lower financial hurdle
Undiscounted 30-year cash surplus	£23.2m	Cumulative cash; useful for reconciliation, not valuation

The distance between £23.2 million of cumulative cash and £1.0 million of NPV is exactly why lifetime-profit headlines need translation. The money arrives over three decades, while most of the capital is committed before generation begins. A project can produce a large cumulative nominal surplus and still create only a thin margin over the required return.

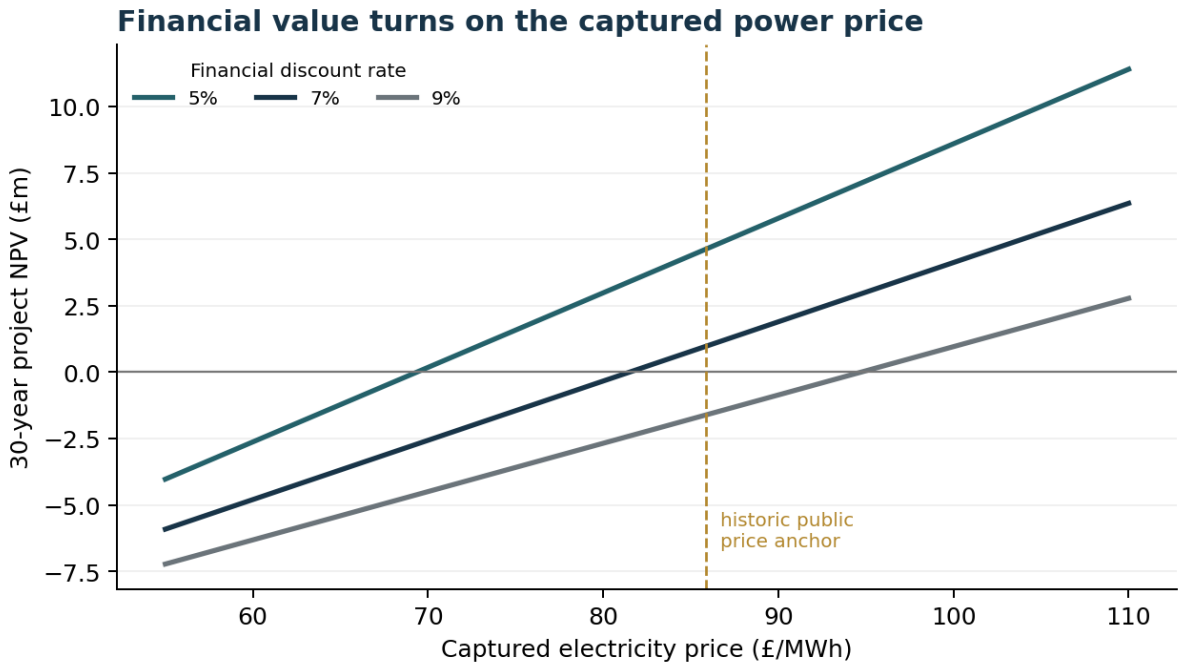

Figure 2. NPV sensitivity to a constant nominal captured electricity price. The dashed line is the historic public revenue-implied price, not a current forecast.

4.3 The downside case exposes the problem with undiscounted profit

Scenario	30-year IRR	NPV	Undiscounted cash surplus
Downside	0.5%	(£8.7m)	£1.1m

Scenario	30-year IRR	NPV	Undiscounted cash surplus
Public-evidence case	7.7%	£1.0m	£23.2m
Upside	12.7%	£10.5m	£39.8m

The downside case assumes £17.82 million of project cost, £60/MWh captured price, 19,000MWh year-one generation, a 3% curtailment haircut, higher degradation and lifecycle costs, and an 8% discount rate. It still ends with approximately £1.1 million of positive undiscounted cash over thirty years, but NPV is roughly negative £8.7 million and IRR is only about 0.5%. A project can therefore 'make money' in a cumulative accounting sense while failing an investment test.

FINANCING AND CAPITAL STRUCTURE

5. Debt can make the annual surplus look simple while lifecycle risk remains

5.1 Reconcile the old £400,000 annual-surplus claim

The current Council FAQ says initial capital will be funded through capital borrowing. It does not disclose the exact project drawdown, interest rate or amortisation structure. For a reference financing lens, the model treats the approximately £15.0 million remaining spend as debt, uses the Council's February 2026 public reference PWLB rate of 5.4%, and amortises it over thirty years. The resulting level annual debt service is about £1.02 million.[27]

Reference annual debt service PMT(5.4%, 30 years, £15.0m) ≈ £1.02m per year

That creates a useful bridge to the old public numbers: £1.7 million revenue less £200,000 routine O&M less £1.02 million of reference debt service leaves about £479,000. This is close to the historic statement that the project could produce up to £400,000 of annual surplus. The resemblance is informative but not evidential proof. The bridge ignores periodic replacements, reserves, other operating costs, precise borrowing terms and timing differences.

5.2 Coverage is a cash-timing problem

In the public-evidence case, reference debt-service coverage before the periodic replacement placeholder bottoms at about 1.18x and averages about 1.34x. Concentrating a £400,000 replacement item in a single year pushes the metric much lower in years ten, twenty and thirty. That does not establish a covenant breach because no project covenant is public. It shows why lifecycle reserves, smoothing mechanisms or separate replacement financing matter when a long-lived asset is funded with level debt service.

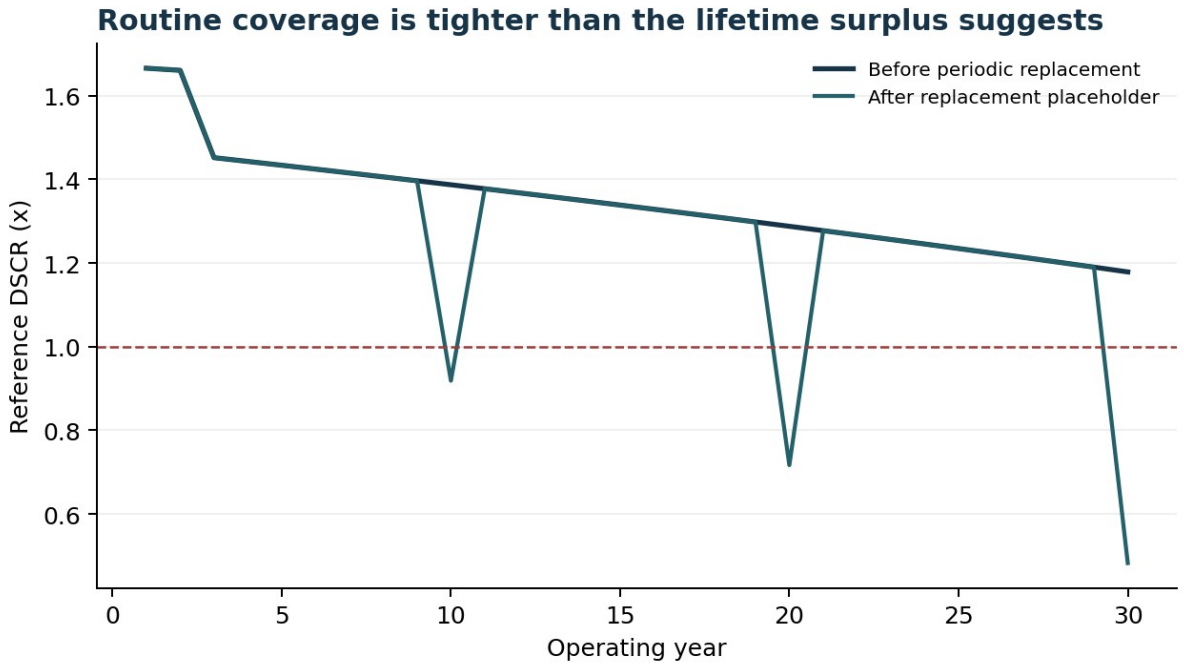

Figure 3. Reference DSCR under a simplified £15m, 5.4%, 30-year financing case. Replacement expenditure is an analyst placeholder.

The broader capital-structure point is familiar from project finance: leverage does not create operating value. It changes who receives the cash, when they receive it and how much downside the residual equity or public balance sheet absorbs. A lower borrowing rate can improve annual headroom; it does not rescue a project whose unlevered economics are structurally weak.

DEVELOPMENT RIGHTS, TIMING AND SCARCITY

6. The scarce asset may be the development package, not the panel

6.1 Land, planning and grid access are complementary assets

A solar module can be purchased from many suppliers. A financeable project requires much more: suitable land, planning consent, a deliverable cable route, a grid connection, procurement, financing and a route to sell the electricity. These inputs are complementary. Missing one can make the rest economically sterile.

Grazeley is unusual because the Council already owns the land, has planning permission and says a grid connection is in place. The BBC/LDRS trigger article reports that the site must be ready by December 2027 to meet connection deadlines; a 28 September report by the Newbury Times attributes the same deadline to the current Executive business-case material. The deadline turns time into an economic input rather than a scheduling footnote.[110]

6.2 A one-year delay has measurable value; the grid connection does not have a disclosed standalone price

If the same thirty operating years are shifted back by one year while construction capital remains committed on the original schedule, the public-evidence case loses about £1.06 million of NPV at a 7% discount rate. This measures the value of delayed cash generation. It is not the market value of the specific grid connection and should not be presented as one.

Timing loss PV of operating cash × [1 - 1/(1+r)] ≈ £1.06m at r = 7%

The grid connection's economic value could be much larger if missing the deadline forced a multi-year queue, reduced export capacity or made the project infeasible. Public evidence does not specify those alternatives well enough to price them. The defensible conclusion is therefore structural: grid access and offtake can create scarcity rent because they determine whether the generation asset can sell useful electricity, but this report does not attach a standalone market valuation to Grazeley's connection right.

WIDER ECONOMICS AND DECISION BOUNDARY

7. Financial return and social value are separate ledgers

7.1 Carbon and local-energy benefits should not be smuggled into project IRR

West Berkshire Council describes the project as both a financial asset and a major contributor to its net-zero programme. Those are distinct claims. Carbon reductions, local resilience, biodiversity changes and any community-ownership benefits can be economically material without being cash revenue to the project. Conversely, a financially positive project is not automatically the highest-value use of public capital.[3]

HM Treasury's Green Book uses a 3.5% real social time preference rate for years one to thirty because social appraisal values costs and benefits from the perspective of society. That is not an appropriate substitute for a project's nominal borrowing cost or financial required return. Mixing the two discounting frameworks can manufacture an attractive NPV by changing the question halfway through the calculation.[9]

This report therefore keeps the financial model narrow. Social and environmental benefits can be appraised separately, with their own evidence and price basis, and then placed alongside the financial case. They are not used to plug a weak cash-flow result.

7.2 The land has an opportunity cost even when no rent cheque leaves the project

The land is Council-owned and currently used for agriculture. Ownership removes an acquisition payment but not the economic value of the land's next-best use. The current agricultural rent is not public, so the base model assigns no invented land charge and instead exposes the item as a sensitivity. This is one place where a full public-sector appraisal should be broader than the project-finance model.[2]

WHAT THE PUBLIC EVIDENCE SUPPORTS

8. Conclusion

The £10 million lifetime-profit claim is plausible only in the weak sense that public numbers can be arranged into financially positive cases. It is not independently verifiable from the current public record. The detailed 2026 business case is confidential, and several inputs that determine the result are missing: the current captured-price path, exact financing, local-offtake terms, lifecycle reserve schedule and full annual cash-flow profile.

What can be established is more useful than a ceremonial yes or no. At the current official £16.2 million cost, a public-evidence reconstruction using the historic £85.9/MWh revenue-implied price generates about 7.7% project IRR and £1.0 million NPV at a 7% financial discount rate. The break-even captured price is roughly £81.5/MWh. A materially weaker power-price and cost case can still report positive cumulative lifetime cash while destroying substantial present value.

The investment case therefore turns on three layers. The first is physical: generation and degradation. The second is commercial: captured electricity price, local offtake and lifecycle costs. The third is financial: capital cost, borrowing and timing. Grazeley's land, planning permission and grid access sit across all three because they determine whether the project can be delivered and monetised at all.

That is the useful answer to what a solar farm is worth. Not the nominal profit accumulated by the end of its life, and not the replacement cost of its panels. Its value is the present value of the cash and wider benefits that the complete development package can actually deliver, under assumptions strong enough to survive scrutiny.

TECHNICAL APPENDIX

Appendix A. Model specification and checks

A.1 Central inputs

Input	Central case	Downside	Upside
Total project cost	**£16.20m**	**£17.82m**	**£14.58m**
Year-one generation	19,800MWh	19,000MWh	20,500MWh
Captured power price	£85.9/MWh	£60/MWh	£105/MWh
Annual degradation	0.30%	0.45%	0.29%
Curtailment haircut	0%	3%	0%
Routine O&M	£200k	£220k	£180k
Replacement placeholder	£400k / 10y	£600k / 10y	£300k / 10y
Financial discount rate	7%	8%	6%

The model is nominal. The public-evidence captured price is held flat in nominal terms; O&M and replacement placeholders inflate at 2%. This is a deliberately transparent stress structure rather than a forecast of UK electricity prices. Formula cells remain live in the accompanying workbook.

A.2 Reproduction checks

Check	Result
Current cost less disclosed spend	£16.2m - £1.2m = £15.0m remaining-spend approximation
Year-one load factor	11.3%
Historic revenue-implied price	£85.9/MWh
Reference debt service	£1.02m/year
Historic cash bridge	~£479k/year before replacements/other costs
30-year public-evidence IRR	7.67%
30-year NPV at 7%	£0.97m
Break-even captured price at 7%	£81.51/MWh
One-year operating-delay value at 7%	£1.06m NPV

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This report presents independent modelled research. It is not an audit of West Berkshire Council, a legal or accounting opinion, or a recommendation to purchase a security or asset. Model results are conditional on the evidence and assumptions stated. Companion workbook: Grazeley_Solar_Investment_Model.xlsx.