Module 1: The Lassonde Curve & The 10 Stages of a Mining Company

Why this is the most important framework

The **Lassonde Curve** — named after Pierre Lassonde, founder of Franco-Nevada — plots a typical mining company's market cap over its lifecycle, from grassroots exploration to production decline. It looks like two peaks separated by a deep valley.

- **First peak:** discovery / maiden resource excitement
- **Valley:** the "orphan period" or "valley of death" during studies, permitting, and financing
- **Second peak:** production ramp-up and cash flow realisation
- **Decline:** as reserves deplete

Most retail investors buy the first peak (discovery hype), get smashed in the valley, and capitulate at the bottom. Sophisticated capital buys the valley and rides the second peak. The framework's value is letting you recognise which peak/valley you are standing in *right now*.

Every other module in this course feeds back into this curve.

The 10 stages

Stage 1 — Concept / Grassroots

- **Typical MC:** under $5m, often $2–3m shells

- **What's happening:** tenement pegging, geophysics, soil/stream sediment sampling, mapping. No drilling yet.
- **Catalysts:** essentially none. Tenement grants, MOUs, "JV signed" announcements.
- **SP behaviour:** drifts; pumped briefly on cheap PR.
- **Reality:** you are buying a story, a postcode, and management. 95%+ never advance past this stage.

Stage 2 — Drilling Begins

- **Typical MC:** $5–20m
- **What's happening:** maiden drill program. Usually RC (reverse circulation) for cost reasons before diamond core.
- **Catalysts:** "rig mobilised", "drilling commenced", "first hole completed", "assays pending".
- **SP behaviour:** the **drill speculation ramp** — SP often runs *before* assays return as punters position for a hit.
- **Reality:** ~90% of maiden programs return nothing economically meaningful. The pre-assay ramp is often the entire trade.
- **ASX example: BSR (Bison Resources)** post-IPO in late 2025 — early drilling on its WA gold tenements with the SP running into anticipated first assays. **TOR (Torque Metals)** is similar — early-stage drilling with drill-for-equity contractor arrangements (a green flag, see Module 6/8).

Stage 3 — Discovery

- **Typical MC:** $20–100m+, sometimes much more in hot commodity cycles
- **What's happening:** high-grade hits in multiple holes, geological continuity emerging, step-out drilling extending the mineralised footprint.
- **Catalysts:** every assay batch is market-moving. Comparisons to nearby tier-1 deposits.
- **SP behaviour: THE FIRST PEAK.** 5x to 50x moves possible in weeks. This is the dopamine spike.
- **Trap:** many discoveries don't substantiate at scale. Step-out drilling reveals grade falls off, mineralisation pinches, or it's a one-pod wonder.
- **ASX example: PC2 (PC Gold)** — Stage 3/4 NT gold discovery with high-grade hits driving repeated re-rates through 2025 into early 2026. The hallmarks were there: multiple consistent intercepts, geological continuity, step-outs extending the footprint, and a tight cap structure (Module 6) that translated grade hits into market cap moves.

Stage 4 — Resource Definition

- **Typical MC:** $50–200m

- **What's happening:** closely-spaced drilling to define a JORC-compliant resource. Metallurgical testwork begins.
- **Catalysts: maiden JORC resource** is a major re-rate event. Subsequent upgrades (Inferred → Indicated → Measured) are progressively less impactful.
- **SP behaviour:** can hold or drift higher into maiden resource, then often sells the news.
- **ASX example: MI6 (Minerals 260)** — defining resources at its WA gold and base-metal projects. **PC2** transitions through this stage as it works toward a maiden JORC resource (planned for mid-2026).

Stage 5 — Scoping Study

- **Typical MC:** flat or starting to soften
- **What's happening:** conceptual economic study, ±35–50% accuracy. Tests whether the project is *worth* progressing.
- **Catalysts:** scoping study results.
- **SP behaviour:** muted. Market starts thinking about capex, dilution, permitting timelines. **The valley begins.**

Stage 6 — PFS (Pre-Feasibility Study)

- **Typical MC:** often **down 30–60%** from discovery peak
- **What's happening:** ±20–25% accuracy. Mining method selected, processing flowsheet designed, infrastructure costed.
- **Catalysts:** PFS results. Capex sticker shock is real and frequent.
- **SP behaviour:** deep valley. This is where capital raises hurt most because the SP is depressed.

Stage 7 — DFS (Definitive / Bankable Feasibility Study)

- **Typical MC:** starting to recover *if* economics are robust
- **What's happening:** ±10–15% accuracy. Lender-ready engineering. Reserves declared from Indicated/Measured resources after applying Modifying Factors (Module 2).
- **Catalysts:** DFS results, **Final Investment Decision (FID)**, financing close, offtake agreements.
- **SP behaviour:** bottom of the valley typically here or just before. **This is where smart money accumulates** — the project is de-risked but the market hasn't re-rated yet.
- **ASX example: SLS (Solstice Minerals)** sits in the studies/DFS region for parts of its portfolio — the kind of stock that grinds in the valley while the work gets done. The opportunity is recognising stocks where the work *is* progressing (catalysts being delivered, no red flags from Module 8) but the SP hasn't responded yet.

Stage 8 — Financing & Construction

- **Typical MC:** re-rating
- **What's happening:** debt + equity + offtake/streaming/royalty package finalised. Construction begins. EPC contractor mobilised.
- **Catalysts:** financing close, ground-breaking, construction milestones, first ore on ROM pad.
- **SP behaviour:** grinds higher with milestones. Setbacks are punished hard.
- **Watch out: 30–50% capex blowouts are common, not exceptional.** Schedule slippage is the norm.
- **ASX example: GLN (Galan Lithium)** — Phase 1 construction completed 31 March 2026 on time and on budget (the exception, not the rule). Note that GLN's recent re-rate from ~$0.09 in mid-2025 to ~$0.47 in January 2026 was the Lassonde **second peak build** — sophisticated capital (Clean Elements) bought the valley at $0.11 and the same fund paid 3.7x more per share five months later (covered in Module 6).

Stage 9 — Commissioning & Ramp-Up

- **Typical MC:** significant re-rate
- **What's happening:** plant commissioning, first concentrate / doré / cathode, ramp toward nameplate capacity.
- **Catalysts:** first product, first revenue, first cash flow, achievement of nameplate.
- **SP behaviour: THE SECOND PEAK** builds here. But ramp problems are normal — recovery shortfalls, throughput issues, grade reconciliation problems — and can crater the SP temporarily.
- **ASX example: GLN** crosses from Stage 8 into Stage 9 in Q2 2026 as it processes first brine and produces first lithium chloride concentrate. This transition is the most volatile point of the curve — get commissioning right and the second peak builds quickly; commissioning problems can crater the SP and force dilutive raises at compressed prices.

Stage 10 — Production & Depletion

- **Typical MC:** tied to commodity price × production × remaining reserves
- **What's happening:** steady-state production, reserve replacement battle, expansion studies, M&A.
- **Catalysts: quarterlies** (production, AISC, cash position, hedge book), reserve updates, exploration around mine, M&A.
- **SP behaviour:** tracks commodity price + operational delivery. Depletion without replacement = terminal decline.
- **ASX example: ELV (Elevra Lithium)** — Quebec hard-rock producer. Through 2024–early 2025, ELV traded in the typical Stage 10 producer pattern: SP tracking spodumene price, operational delivery measured quarterly, reserves and grade updates

as recurring catalysts. This is where commodity-cycle plays compound — a producer can 5–10x on the underlying commodity moving without doing anything new operationally.

A reference map of typical Lassonde positions

This is a snapshot — stocks move along the curve over time, sometimes forward, sometimes backward, occasionally sideways for years. Use it as a way of orienting any new ticker quickly:

Stage	Typical MC	Risk profile	Position sizing default	ASX examples (April 2026)
1 — Concept	<$5m	Lottery	0.5–2%	Most $2–3m shells
2 — Drilling	$5–20m	Lottery	0.5–2%	BSR, TOR (early drilling)
3 — Discovery	$20–100m+	High volatility, asymmetric	2–4%	PC2
4 — Resource def	$50–200m	High volatility	2–4%	MI6, PC2 (transitioning)
5 — Scoping	flat / softening	Orphan period	2–5%	varies
6 — PFS	-30 to -60% from peak	Deep valley	2–5%	varies
7 — DFS	recovering	Smart money zone	2–5%	SLS (parts of portfolio)
8 — Construction	re-rating	Execution risk	3–6%	GLN (entering Stage 9)
9 — Commissioning	significant re-rate	Ramp risk	3–6%	GLN (Q2 2026 onwards)
10 — Production	commodity × tonnes	Macro-driven	5–10%	ELV

(Position sizes are defaults — Module 10 covers sizing in detail. They depend on conviction, total mining allocation, and your risk tolerance.)

Why the valley exists (and why it's the opportunity)

1. **No catalysts.** Discovery dopamine has worn off. Months of nothing while consultants run studies.
2. **Capital raises.** PFS/DFS work costs millions. Issued at deep discounts because SP is weak. Existing holders get diluted.
3. **Capex sticker shock.** $200m–$2bn+ capex numbers scare retail.
4. **Time.** 3–7 years from discovery to first production is typical. Retail attention does not last that long.
5. **Permitting.** Indigenous Land Use Agreements, environmental approvals, water licences, native title — glacial pace, especially in WA and NT.

The valley is where 10m → 100m+ MC stories actually get *built*. Not at the discovery pop (gambling), but at the bottom of the valley when a real project with real economics is being de-risked and the market hasn't woken up yet.

The GLN case study is worth internalising here. In mid-2025, lithium was deeply out of favour, GLN's SP had collapsed from $1.70+ in 2022 to ~$0.09. Most retail had capitulated. That August, a specialist lithium fund (Clean Elements) did 77 days of due diligence and put $20m in at $0.11 — a 21% **premium** to market. Five months later, after Phase 1 construction had visibly progressed, the same fund paid $0.41 in another placement at premium-to-VWAP pricing. The valley was where the asymmetric trade existed; by the time mainstream coverage and broker upgrades arrived, the easy money had been made.

Where 10m → 100m MCs come from (honestly)

Three legitimate paths:

1. **Discovery (Stages 2 → 3).** Highest-conviction trade if you're early. Lowest probability per attempt. Lottery economics — most go nowhere; the rare ones go 20-50x.
2. **Re-rating from valley (Stages 7 → 9).** Lower upside per stage but much higher probability if you've done the work. The "boring" path that compounds.
3. **Commodity cycle.** A producer (Stage 10) can 5–10x just because the underlying commodity moved. Macro overlay — covered in Module 9.

A fourth path that exists but is harder to time: **takeover.** Mid-tier or major acquires the developer at a 20–80% premium. Often happens at Stage 6–8. (GLN rejected a US$150m takeover bid from Huayou + Renault in late 2024 — sometimes management sees more value standalone, sometimes they're wrong.)

Using AI tools to research mining stocks — a 2-stage workflow

A practical note that's worth flagging early because most retail are now using AI tools (ChatGPT, Claude, Gemini, Grok, etc.) to research stocks and getting burned by it.

What AI is good at

- Explaining frameworks and concepts (the Lassonde Curve, JORC categories, capex intensities, what AISC means)
- Summarising publicly disclosed information *if* it has been fed the actual document
- Comparing similar concepts side-by-side (hard rock vs brine, Inferred vs Indicated, scoping vs PFS)
- Generating questions you should be asking about a stock
- Pattern recognition once you describe what you're seeing

What AI is bad at and routinely gets wrong

- **Specific drill intercepts and assay results** — these get hallucinated frequently
- **Current cap structure** — SOI counts, recent placements, options outstanding are often stale or invented
- **Recent share prices and market caps** — without a search tool, models work from training data that's months to years out of date
- **Identity of management, directors, major holders** — gets people confused, mixes up similarly-named companies
- **Specific tenement boundaries, geology, drill hole IDs** — these are often invented if the model is asked confidently
- **Recent ASX announcements** — not in training data; fabricated when extrapolated from older info

The 2-stage workflow

Stage 1 — Frame the question with AI. Use the AI to:

- Explain the framework relevant to the stock (Lassonde stage, study type, deposit type, jurisdiction)
- Generate a list of specific questions you need answered
- Identify what good and bad would look like for that specific situation
- Compare it conceptually to similar companies you already understand

Stage 2 — Verify every specific fact against primary sources. That means:

- The company's ASX announcements page directly (not summarised by AI)
- The most recent quarterly Appendix 5B (Section 8 cash burn, Section 1.2 cash position)
- The most recent annual report and any maiden resource / scoping / PFS / DFS document
- Director announcements (Appendix 3Y) for on-market buying / selling
- The Top 20 holders list at the back of the annual report

The AI-research failure mode is doing Stage 1 and skipping Stage 2 — letting the AI confidently tell you that a company has X tonnes at Y g/t when it has neither. The number sounds plausible. It isn't. **Every specific number, name, or date that matters to your decision must be verified from the company's own ASX disclosures.** No exceptions.

A simple rule: if you're about to put real money behind a fact, that fact has to be linked back to a specific ASX document you've actually read. If the AI gave it to you and you can't find it on the ASX announcements page, treat it as not real until proven otherwise.

Practical exercise

For every ASX mining stock you're tracking, write down:

1. What stage is it at?
2. What was its peak MC and when?
3. Where on the curve is it sitting *now* relative to its peak?
4. What's the next genuine catalyst that could move it?
5. What ASX document did you verify each of those answers from?

If you can't answer all five, you don't actually know the company well enough to size a position.

What I'm uncertain about

- MC ranges by stage vary massively by commodity, jurisdiction, and macro cycle. The numbers above are typical Australian junior patterns over the last decade — treat as

rough guide, not law.

- The Lassonde Curve is a heuristic. Plenty of companies skip stages, fail at any stage, or backslide. A discovery can de-rate to below pre-discovery levels if step-out drilling disappoints.
- Timeframes have been getting *longer* in WA due to permitting bottlenecks. 3–7 years discovery-to-production is increasingly optimistic for new projects.
- The ASX examples cited above are illustrative of stage positions as at April 2026 — they will move along the curve over time. Re-classify them yourself when you re-read this in 6 months.

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