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# CONSTRUCTION COST INFLATION - TIME TO REVIEW PROJECT BUSINESS CASES

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Prioritising projects by risk-adjusted returns

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## Introduction

In Ireland, the past 18 months have been characterised by much uncertainty and a number of stops and starts in the construction industry. In particular since January 2021, there has been significant construction cost inflation resulting in increases and uncertainty in forecast development costs for projects due to these escalating costs. Decision makers need to have a range of tools available to decide which projects to prioritise, particularly when delays occur and assumptions change as they have done in the past 12 months.

With significant changes in project assumptions during Covid, not least changes in timing, costs and revenues, there may be possible knock-on impact on other projects. You need to be able to consider how to prioritise projects in a portfolio. This paper illustrates an approach to prioritisation of a portfolio of projects.

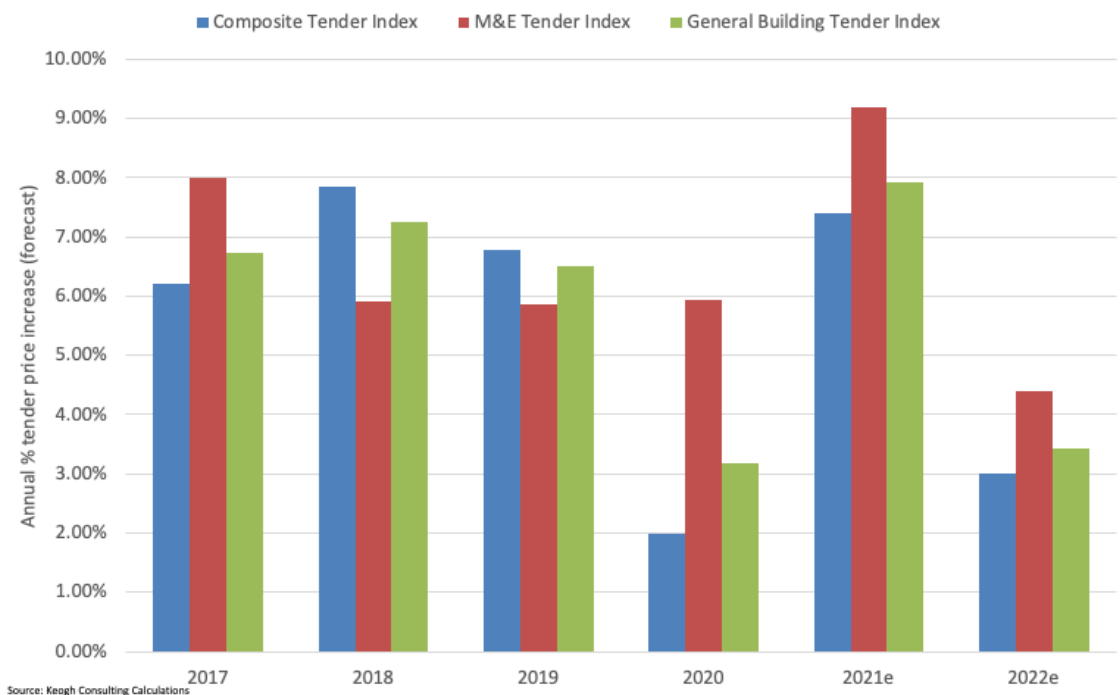


Figure 1 - Historic & Forecast Tender Price Inflation<sup>1</sup>

At times elaborate financial and economic models<sup>2</sup> are prepared to justify potential projects but when it comes down to the final decision, especially when hard choices need to be made among multiple opportunities, less rigorous assessment means are dusted down - arbitrarily discounting estimates of expected returns or economic benefit.

There are however transparent ways to bring assessments of risk into investment decisions. In particular, some analytical tools commonly employed in capital intensive industries can be applied, such as those investing in projects with long lead times or those investing in shorter-term projects that depend on the economic cycle. The result can be a more informed, data-driven discussion on a range of possible outcomes. Of course, even these tools are subject to

<sup>1</sup> Source: Keogh Consulting calculations

<sup>2</sup> The approach outlined is applicable to economic CBA and financial appraisal.

assumptions that can be speculative. But the insights they provide can still produce a more structured and standardised approach to making decisions and a better dialogue about trade-offs.

## Residential Case Study

A simple residential development project is presented as a case study of using the approach which could be used for example by a company when deciding how best to allocate investment over a portfolio of residential, commercial, retail and industrial project opportunities or over a portfolio of residential projects awaiting a start on site. With construction activity ramping up (as evidenced by increased commencement notices) but with a significant number of projects on hold now may be a good time to undertake such an analysis.

## A Stepwise Approach

The real power of using these tools comes from using them systematically leading to better decisions from a more informed starting point. It is a stepwise approach as illustrated below:

1. Create a standard comparable model for projects
2. Critical evaluation of how much project performance is at risk
3. Consistent assessment of each projects risks and returns. Note key assumptions (& sources) made.
4. Evaluate how the projects compare
5. Determine how current and potential projects can be best combined into a single portfolio of projects

### **Create a standard, comparable model for projects**

A lack of standardisation in project initiation, decision process, and accountability creates opacity that makes it difficult to challenge proposals, compare projects, or assess the trade-offs of investing in one project over another without compromising.

A standard model for all projects should be developed that identifies the detailed sources of value and benchmarking metrics that reflect that value for comparison with other projects. This includes setting standard rules for key outputs and assumptions on, for example, programme duration, inflation, costs, and revenue.

A project model requires that each proposal demonstrate both expected direct benefits, in economic value added, and expected indirect benefits, in the value of prevented loss or mitigated risk over its life cycle. While this can initially impose a more extensive analytical burden on project teams, the effort always provided better and earlier clarity into the true value of each project and allows for important early adjustments - in itself a key element of defining an optimal portfolio. In addition, project teams can begin to appreciate the need to develop proposals more carefully and comprehensively up front, which can pay dividends later on, as fewer projects are delayed at important decision gates when key assumptions or information is missing. Embedding a knowledge management process in an organisation is key and historic costs, direct and indirect benefits should be tracked in databases.

### **Assess impact of maintaining the status quo – should you take cash off the table?**

When evaluating a new project, the instinct is to sometimes rush headlong into an assessment of

risks and returns of the project on a standalone basis without fully understanding the sources and magnitude of the risks already faced. This isn't surprising, perhaps, since most naturally feel they know their own business. However, it does undermine their ability to understand the potential results of a new project. Even an optimal evaluation of a new project only goes so far if it can't be compared with the status quo/counterfactual (banking the cash taken off the table) or the incremental risk impact gauged.

**Consistent evaluation of each project**

Once there is a clear understanding of the risks of your current portfolio of projects, you can drill down on risks in these proposed projects and eliminate the need - and the temptation - to adjust net present value (NPV) or risk premiums arbitrarily. What's needed is a more consistent approach to evaluating project economics and risks, putting all potential projects on equal footing. The cornerstone for such an approach, for example, can be a standardised template for project evaluation that features three main components:

- 1) a project's risk-return profile at a glance, shown as a probability distribution of project value<sup>3</sup>;
- 2) an overview of standardised summary metrics for risk and return; and
- 3) an explicit description of the sources of risk.

The project team specifies the basic economic drivers of a project, but a central strategic-planning and risk department prescribe consistent key assumptions, help to assess and challenge the risks identified, and generally ensure that the method underlying the analysis is robust.

**Characterise each project with a simple risk-based dashboard**

A corporate finance purist might challenge the idea of a probability distribution of discounted cash flows and the extent to which a chosen discount rate accounts for the risk already, but in practice, a simple and transparent dashboard gives clarity to the analysis.

	Baseline metrics	Risk corrected
Capex on development project, € million	35.51	36.21
NPV, € million	1.89	1.51
Before Tax IRR, %	12.67	11.79
Payback period, years	3.83	3.85
Return on capital <sup>4</sup> , %	5.32	4.26
RAROC <sup>5</sup> , %		3.89

**Table 1 - Key project metrics**

3 A simple excel macro for a Monte Carlo simulation can be used for this.

4 Ratio of NPV to investment

5 Risk-adjusted return on capital = (expected NPV) / (planned investment + NPV at risk)

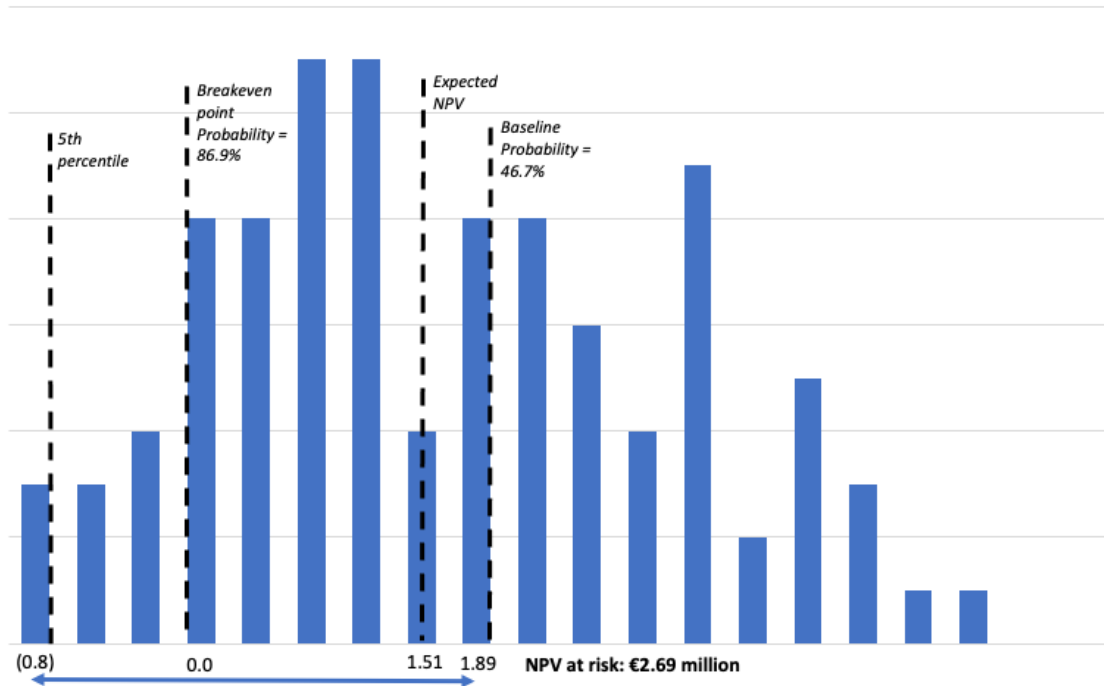


Figure 2 - Net present value (NPV) distribution, € million

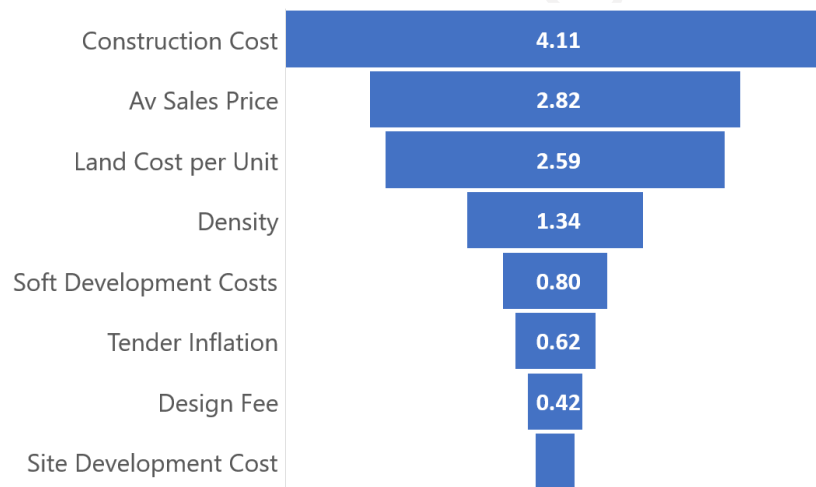


Figure 3 - Impact on project NPV, € million

The project displayed in Table 1 and Figure 2 is one where the economics are clearly worse than in the original baseline proposal; indeed, this project is only 47 percent likely to meet that baseline. Nevertheless, it has more than an 85 percent chance of breaking even. And even after considering the potential need for additional investment after risks materialise, the project has attractive returns.

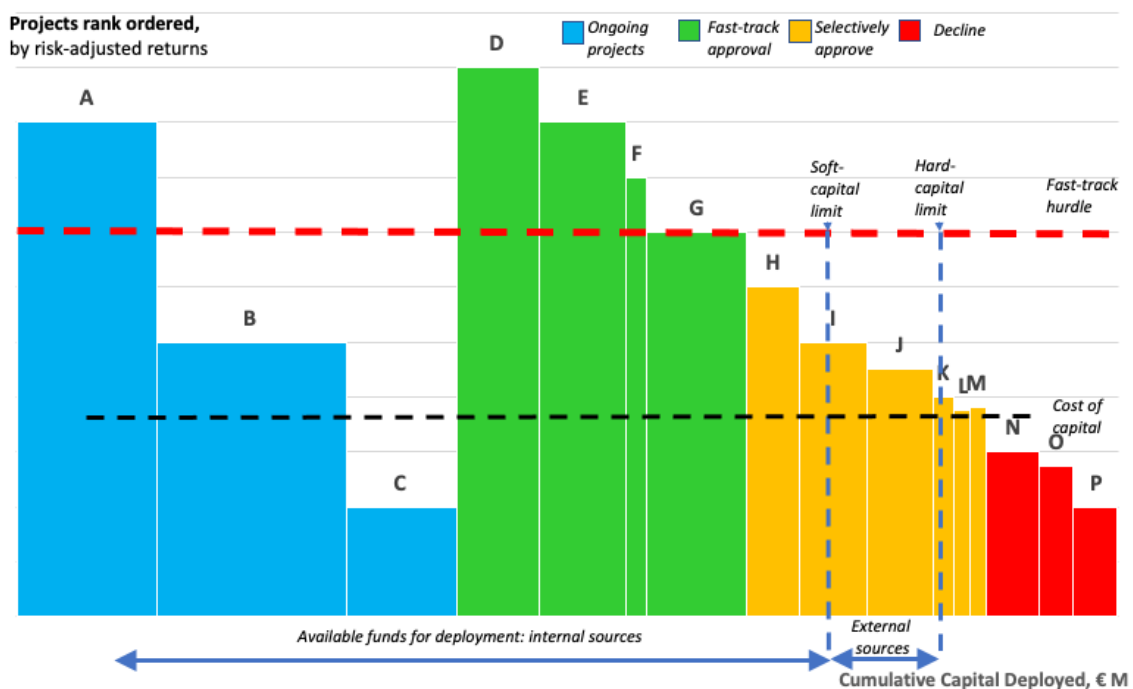
Making extra information about the distribution of outcomes available (Figure 3) shifts the dialogue from the typical go/no-go decision to a deeper discussion about how to mitigate risk. In this case, it is clearly worth exploring, for example, how to reduce the likelihood of overruns in capital expenditures in order to shift the entire probability distribution to the right. This is likely considerably easier to achieve if started early.

**Rank and prioritise projects by risk-adjusted returns**

The reality is that companies typically have a large number of medium-size projects, many of which are attractive on a stand-alone basis - but there is limited capital headroom to pursue them. It isn't enough to evaluate each project independently; each must be evaluated relative to the others too.

As project champions can see the capital budget as an opportunity to win allocation of as much money as possible, with the expectation that they will later be able to spend as they see fit, a finance organisation can assert a level of rigour into the review of projects and scrutinise proposals for the kinds of arrangements that mask such problems. In a non-property development environment business-unit managers can often bundle together projects with poor financial viability, typically under general labels of sustaining capital or environmental, health and safety risk, but since the process is set up to challenge both a business case and a technical case for a project through each stage-gate review, the process allows a detailed review of each proposal to be carried out, compelling project teams to single out discrete elements and justify those not directly related to the stated purpose of the bundle on their own merits.

It's not uncommon to rank projects based on some estimate of profitability, ratio of NPV to investment or ratio of benefits to costs. But since the challenge is to figure out which projects are most likely to meet expectations and which might require much more scarce capital than initially anticipated, a better approach is to evaluate them based on a risk-adjusted ratio instead. This approach can be put into practice by segmenting projects based on an assessment of risk-adjusted returns and then investing in new projects up to the limit imposed by the amount of capital available Figure 4.



**Figure 4 - Ranking of projects by risk-adjusted returns**

In a property development company with standalone financing of projects the capital available may be the equity investment available for each project.

## Order projects by risk-adjusted returns to identify which to fast-track and which to decline.

1. **Red Projects** – Projects that clearly fail to meet their cost of capital - the lowest cut-off for risk-adjusted returns - are speedily declined or sent back to the drawing board.
2. **Green Projects** – Those that clearly meet an elevated hurdle rate are fast-tracked without waiting for the annual prioritisation process.
3. **Orange Projects** – Projects in the middle, which would meet their cost of capital but do not exceed the elevated hurdle rate, are rank ordered by their risk-adjusted returns. For these projects, ad hoc discussion can shift the rank ordering slightly. But, more important, the exercise can also quickly focus attention on the handful of projects that require nuanced consideration. That allows a decision to be made on which ones can be moved forward safely, considering their risk and the constraints of available capital.

## Determine the best overall mix of projects

An aggregated and dynamic view of all projects as a single portfolio should be built and managed. This is a critical yet often missing step that provides important insights for capital allocation. It allows fundamental questions about the likely returns of different portfolio configurations and the best mix of compliance and replacement relative to expansion projects to be addressed. The goal is to drive as much transparency and internal comparability as possible across a project portfolio and connect it to critical sources of value, so that informed decisions can be made as demands on capital shift—ideally acting pre-emptively, and, if not, then reacting quickly. The destination is transitioning from a no portfolio view at all to a formal capital-review process. Capital-expenditure-portfolio scenarios need to be compared on a semi-annual basis when funding decisions are made.

The approach above works well for organisations that seek to choose their investments from a large number of similar medium-size projects. But companies may face opportunities quite different from their existing portfolio - or they must weigh and set project priorities for multiple strategies in different directions - sometimes even before they've identified specific projects. Usually this boils down to a choice between doubling down on the kinds of projects the company is already good at, even if doing so increases exposure to concentrated risk, or diversifying into an adjacent business.

## Conclusion

Managing risk (and return) in capital-project and portfolio decisions will always be a challenge. But with an expanded set of tools, it is possible to focus risk-return decisions and enrich decision making, launching a dialogue about how to proactively manage those risks that matter most in a timely fashion.



## Appendix – Case Study Project Details

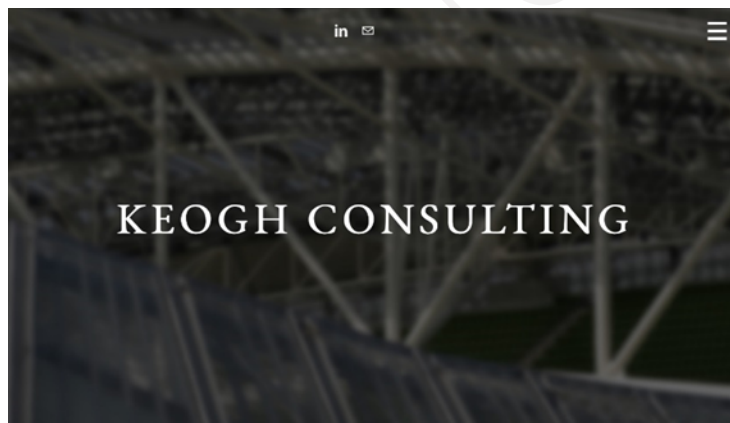
Development Description		Project Cashflow, € million				
Site area (A)	1.0	p/e	31-12-19	31-12-20	31-12-21	31-12-22
Average unit size (sq m NIA)	80.0	Costs	(5.15)	(4.89)	(25.47)	0
Target density (UPA)	100	Revenues	0	0	4.17	37.57
Assumed N:G	90.0%	Nett CF	(5.15)	(4.89)	(21.30)	37.57
Units (#)	103	Cumulative CF	(5.15)	(10.04)	(31.34)	6.23
Development Area (sq m GIFA)	9,241					
Average Height (FFL)	5.0					
Coverage	44.0%					
Plot ratio	2.20 x					
Assumptions		Appraisal	Baseline	Risk Corrected		
Construction Costs (per sq m)	2,100	Capital expenditure, € million	35.51	36.21		
Site Development (per A)	625,000	NPV, € million	1.89	1.51		
Design Costs (% TCC)	9.0	Before Tax IRR, %	12.7	11.8		
Development Costs (per sq m)	405	Payback period, years	3.83	3.85		
Tender inflation (% p.a.)	6.0	Return on capital, %	5.3	4.3		
Land (per unit)	50,000	RAROC, %	-	3.9		
Cost of capital	8.0	Prob. to break even	87%			
Av. Sales Revenue (incl. VAT)	460,000	Prob. to meet baseline	47%			
Costs, € million						
Site	5.15					
Site Development	0.65					
Construction	19.41					
Inflation	1.83					
Design & Soft Costs	5.71					
Contingency	2.76					
Total Development Cost	35.51					
Revenue, € million						
Total Sales (ex VAT)	41.74					

## Keogh Consulting Overview

Individuals and organisations delivering projects face complex challenges from concept development, through feasibility assessment, delivery, to operation. Keogh Consulting provide specialist resources to assist and improve the development and delivery of capital projects. Through use of agile and lean approaches we ensure that the right projects are done in the right way on time and within budget.

We have practical industry experience in a range of sectors gained over 25 years in nearly every aspect of a projects life cycle and have advanced degrees in engineering, business administration, finance and corporate governance. We provide a broad range of integrated services touching upon almost every aspect of a project from idea generation to operation and have advised on projects ranging from business start-ups to major public capital projects and programmes.

For further information about this article or issues raised in the article or should you require further information on how Keogh Consulting can help your project please contact us at [info@keoconsult.com](mailto:info@keoconsult.com).



### Develop. Deliver. Improve.

Delivering projects involves complex challenges from concept development, through feasibility assessment, to delivery and operations.

Keogh Consulting provide specialist resources to assist individuals and organisations improve the development and delivery of capital construction projects. Specialising in the real estate sector we use a suite of decision, project management and cost control methodologies to help deliver projects.

Through use of these agile and lean approaches we ensure that the right projects are done in the right way.

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