



Developing Student Residences in Dublin - A Case Study

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Introduction

Richard and his friend Sean are exploring the idea of developing a student residence complex near University College Dublin (UCD). South County seems to present attractive market and demographic conditions for investment in student housing in 2018. But before committing a large share of his personal wealth to the project Richard needs to conduct a more careful analysis of its potential risks and returns.

By putting yourselves into the shoes of a budding real estate entrepreneur, you are required to evaluate the merits and pitfalls of various approaches to the technical feasibility and financial analysis of a real estate development projects.

Richard and Sean had been involved in a similar project in Galway in the late 90's when they had previously worked together – they knew how much it would cost and how long it would take to build. The only questions remaining was where they would build and was a student residence really the best idea for their money.

Market for student accommodation in the city of Dublin

The HEA¹ 'Report on Student Accommodation: Demand and Supply' says third-level institutions plan to invest €1.2 billion in developing bed spaces over the period to 2024. They estimate that there was a demand for 57,104 bed spaces in 2014 and that it is projected that the demand will increase to just over 68,670 by 2024. The current number of bed spaces, both HEI and private, suitable for student accommodation is estimated to be just under 31,300. Taking into account projected bed space development, it is estimated that the total available beds will rise to just under 43,500 in 2024 - this will still leave the sector with a shortage of over 25,000 beds due to the expected growth in the student population in that period.

In general, in the main urban areas of Dublin, Cork, Galway, and to a lesser extent Limerick, the availability of campus accommodation is a prerequisite for attracting new overseas students, as students can find it hard to procure acceptable affordable accommodation in proximity to a campus in these areas. HEIs report that international students demand guaranteed accommodation for at least the first year at time of recruitment. The projected increases in International student numbers will put further pressure on availability of student accommodation for domestic students.

Location	Public	Private	Total
Dublin	6,501	3,786	10,287
Cork	813	2,975	3,788
Galway	764	2,466	3,230
Limerick	2,590	4,226	6,816
Waterford	446	1,919	2,365
Other locations	0	4,810	4,810
Overall Total	11,114	20,182	31,296

Table 1 - Existing student accommodation in Ireland 2014

Discussions with HEIs and other stakeholders suggest that the shortages of available accommodation are high in Dublin, Cork and Galway and to a lesser extent Limerick. Accommodation in other areas, along with private rented accommodation, is generally adequate to meet demand.

Market data

Sean was able to share with Richard information on the rental cost of university affiliated student housing options as he had a nephew attending the University there.

UCD students can choose to live on-campus or rent accommodation off-campus. Below are approximate costs related to the various accommodation types available². On-campus prices shown are based on the 2016 – 2017 academic year.

- On-Campus, not catered - €550 - €675 per month

¹ www.HEA.ie

² Source: www.ucd.ie

- On-Campus, catered - €690 - €880 per month

Because on-campus housing was only provided during the academic year Sean calculated the equivalent monthly rate³ for a full year.

Sean also contacted the UCD accommodation office and consulted a property rental website⁴ that he had heard about in order to understand the range of average rents (including utilities) in the nearby area in off campus accommodation.

- Off-Campus, student residence - €980 – €1,100 per month
- Off-Campus, own studio/apartment - €980 – €1,100 per month
- Off-Campus, shared apartment - €600 – €900 per month

Given the low vacancy in existing off-campus accommodation, it was no surprise to Sean and Richard that there were no vacant land parcels for sale close to the campus. Therefore developing their apartment project would require them to acquire a site or sites currently occupied by older buildings, demolish them, and redevelop the site. The areas of interest were already zoned for high density residential property, with student resident usage permitted, and typically were occupied by low intensity former industrial units.

The proposed project

Given Sean's familiarity with the design of such buildings, he and Richard planned to construct something very similar to their previous project in Galway. By reusing designs and engaging the same design team the developer would save money and time during the planning phase and they would be able to adapt the design to the geometry of whatever site they chose. Their initial thoughts were that the proposed property would consist of a single four storey building containing 68 bedrooms in 28 apartment units with a total gross square footage of 30,575 though only 87% of that space would be rentable. The units would be a mix of nine three bedroom/two bathroom units and twelve two bedroom/two bathroom units. The building would feature private bathrooms, open floor plans, fitted kitchens, high ceilings, and balconies and would be constructed in accordance with all building regulations pertaining to this type of building. External space would be allowed for cycle parking, landscaping and a small amount of parking for visitors. Richard and Sean did not think that slight modifications to the previous design would affect the building costs so they assumed that the new property could be built for €170 per sq. ft. with a further hard cost allowance of €250,000 for any required demolition, external works and landscaping. They further assumed that total soft development costs were estimated at 15% of total hard costs.

Building square footage (gross internal floor area)	30,575 sq ft	
Construction costs (€ per sq ft ex VAT)	170	
Demolition		250,000
Hard construction costs		5,447,701
Fixtures, Furnishings & Equipment Costs		275,000
Soft costs	15.00%	817,155
Total Development Costs (pre-financing)		6,789,856

Table 2 - Proposed Development Description (December 2017)

³ Annual fee divided by 12.

⁴ www.daft.ie

An initial programme for the development summarised in *Table 3 - Proposed Project Programme* was prepared

Prepare Feasibility Study	01-07-18
Complete Purchase of Site	31-12-18
Demolition after planning obtained	31-08-19
Start block construction	30-09-19
Payoff Construction Loan & refinance	30-09-20
Building available to occupy	30-09-20

Table 3 - Proposed Project Programme

Back-of the envelope Feasibility

To quickly check the projects technical and financial feasibility, Richard and Sean prepared a back of the envelope calculation to determine approximately how much they could spend on acquiring the necessary land. They started by constructing a rent roll, which calculated the total income to be collected from the proposed property, assuming that the building was already in place and occupied - *Table 4 - Annual Income and Estimated Sales Revenue*. They assumed that they could charge above average rents as there was a scarcity of accommodation in Dublin and they proposed to build a high-quality property. Expenses were also estimated as if the building were currently in existence. With this information a current income statement was constructed *Table 5 - Annual Income Statement*.

	# of Units	Bedrooms	Sq ft	Rent/Mo (€)	Rent/Yr (€)	Rent/Mo/Room (€)	Est. Sales Price
Apartments Unit Style							
3 Br/2 Ba	12	36	1,150	3,000	36,000	1,000	595,000
2 Br/2 Ba	16	32	800	2,000	24,000	1,000	450,000
Total	28	68	26,600	68,000	816,000	1,000	14,340,000

Table 4 - Annual Income and Estimated Sales Revenue

Revenue			
	Gross Rental Income		816,000
	Parking Income		-
	Vacancy Loss	0%	-
	Credit Loss	0%	-
	Total Income		816,000
Expenses			
	Property Tax		12,600
	<i>Operating Expenses:</i>		
	Common Area Electric		14,700
	Common Area Gas		3,750
	Common Area Cleaning		7,280
	Security System		2,000
	Waste Disposal		5,000
	Unit Turnover Cleaning		7,000
	Insurance		5,000
	Management Fee	4.0%	32,640
	Total Operating Expenses		77,370
	Total Expenses		89,970
	Net Operating Income		726,030

Table 5 - Annual Income Statement

Funding Approach

Richard and Sean have had some conversations with banks about funding this type of project and the banks have indicated that upon completion the building would be able to support permanent financing up to a 75% loan-to-value ratio (LTV) with a required minimum debt service coverage ratio of 1.25. Current loan rates for investment type properties were 4.625% and were amortised over 25 years. From these assumptions, it was determined that they could spend a little over [€1.5 million] for site acquisition and the project would still be financially feasible *Table 6 - Back of the envelope site value calculation.*

	(€)
Net Operating Income (NOI)	726,030
Divide NOI by minimum DSCR = 1.25	580,824
Divide by 12 (monthly debt service)	48,402
Supportable mortgage amount	6,274,589
Divide by 75% LTV	8,366,118
Construction cost	6,789,856
Supportable site acquisition cost	1,576,262

Table 6 - Back of the envelope site value calculation

Next steps

Richard and Sean were excited about the possibility of working together on a development project. Sean, having made a profit from the sale of his LinkBook shares and having just retired, was ready to start scouting for a suitable plot of land. Richard agreed that it didn't hurt to start looking but took a more cautious viewpoint – it had taken him a long time to accumulate his savings through many investments over the years. In particular, he was worried that there was more to analyse than simply whether or not the project seemed feasible. That is, just because the project could move forward did not necessarily mean that it should. If there were income producing properties already on the land they would want to acquire; maybe it didn't make sense to raze

them; or possibly it would be better to do a straight apartment development and sell the apartments. Property was still expensive in Dublin in spite of the recent economic difficulties and suitable sites may be too expensive for what they were proposing.

Richard was concerned that he and Sean had incorporated many assumptions straight from the Galway project and that residential specifications had changed significantly since then. He also realised that none of their analysis had considered the fact that it would take time to build and that any profit on it would not be realised for a long time. And even if the project turned out to be profitable, did that mean that it was the best thing to do with his savings, and what was the best way for them to structure the project?

A site in the paper

While reading the commercial property section Sean came across a 0.615 Acre site in Donnybrook. While currently occupied by a number of old buildings and with a chimney stack on the protected structures list, the sites current Z1 zoning (To Protect Provide and Improve residential amenity) would seem to make the site suitable for either a student residence or apartment use. Sean wondered would it be feasible to construct what they were thinking about on the site – he wasn't going to worry too much about the site geometry for the moment and sat down and drew up a checklist of what he needed to review to evaluate the site for possible development:

1. The allowable uses per zoning classification: user activities permitted in a zoning classification
2. The Building density: the number of residential units per acre/hectare
3. The allowable plot ratio / Floor to area ratio (FAR): Gross building area divided by the square meterage of land area
4. Setback/building line: requirement to construct building a specified number of meters from the right of way line or other landmark
5. Building height limits: normally expressed as a number of floors (storey count) or an overall building height in meters. What slab to slab height is suitable for this design of building?
6. Required building footprint: the space/area included within the perimeter of a slab, wall or exterior of a structure. What efficiency factor is usually achieved with this type of building?
7. Plot/building coverage: the percentage of the overall site covered by building footprint
8. Parking ratio: required number of parking spaces per sq. m. of gross building space or per number of apartment units. E.g. 1.5 spaces per apartment unit

It now was time to do the analysis and see what the best option was and whether or not they should proceed.

Appendices – Ireland Economy Data

Income distribution in Ireland



Figure 1 - Income Distribution in Ireland⁵

Household income	Max Purchase Price	Required Deposit	Annual Loan Cost
100,000	400,000	50,000	(20,925)
120,000	480,000	60,000	(25,110)
140,000	560,000	70,000	(29,295)
160,000	640,000	80,000	(33,480)
180,000	720,000	90,000	(37,665)
200,000	800,000	100,000	(41,850)

Table 7 - Affordability Limit Based on Central Bank of Ireland Lending Rules⁶

⁵ Source: Income Tax & USC. Tax Strategy Company Paper 14/07. 16/09/2014

⁶ Since the time of preparation of the case the loan to income (LTI) and loan to value (LTV) ratios have changed

Appendix – Property Terminology

Annualised rent

The gross rent receivable on a cash basis as at the reporting date.

Capitalisation rate

The net operating income (NOI) from a property divided by the cost of purchasing the property (assuming an all cash purchase)

Capital return

Calculated as the change in capital value of a portfolio, less any capital expenditure incurred, expressed as a percentage of capital employed over the period, as calculated by IPD. Capital returns are calculated monthly and indexed to provide a return over the relevant period.

Capital value

$$\frac{\text{Annual Rental Income}}{\text{Yield}} \times 100$$

Capped rents

Rents which are subject to a maximum level of uplift at the specified rent reviews as agreed at the time of letting.

Cashflow Available to Service Debt (CFADS)

A project's cash flow available for debt service (CFADS) is analysed by project lenders (senior debt banks) to determine debt sizes and repayment criteria. CFADS is an important measure that determines debt repayment calculations and ratios including debt service coverage ratio (DSCR), loan life coverage ratio (LLCR) and project life coverage ratio (PLCR). In a typical project finance model, the cash flow available for debt service is calculated by netting out revenue, operating expenditure, capital expenditure, tax and working capital adjustments.

Debt Service

Debt service is the cash that is required for a particular time period to cover the repayment of interest and principal on a debt. Debt service is often calculated on a yearly basis.

Debt Service Cover Ratio (DSCR)

The debt service coverage ratio formula (DSCR) is calculated by dividing net operating income (NOI) by total debt service. Net operating income is the income or cash flows that are left over after all of the operating expenses have been paid. This is often called earnings before interest and taxes or EBIT.

Density

The number of residential units per acre/hectare

Developer's profit

The profit on cost estimated by a valuer. The developer's profit is typically calculated by a valuer to be a percentage of the estimated total development costs, including land and notional finance costs.

Development construction cost

Total cost of construction of a project to completion, excluding site values and finance.

Development yield

The target return, measuring income against the costs expended.

$$\text{Target Return} = \frac{\text{Exit Rent or MRV}}{\text{Total Project Costs}}$$

Net Initial Yield

The annualised rents generated by the property, after the deduction of an estimate of annual recurring irrecoverable property outgoings, expressed as a percentage of the property valuation (adding notional purchaser's costs).

Earnings

The profit after taxation excluding investment property revaluations and gains/losses on disposals, intangible asset movements and their related taxation.

Vacancy rate

Estimated market rental value (ERV) of vacant space divided by ERV of the whole portfolio, excluding developments. This is the inverse of the occupancy rate.

Estimated rental value (ERV)

An external valuers' opinion as to the open market rent which, on the date of valuation, could reasonably be expected to be obtained on a new letting or rent review of a property.

Estimated (Net) Development Value

The estimated end value of a development project as determined by an external valuers for when the building is completed and fully let (taking into account tenant incentives and notional purchasers costs). It is based on a valuer's view on ERVs, yields, letting voids and rent-frees.

Fair value

Estimated amount for which a property should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction after proper marketing and where parties had each acted knowledgeably, prudently and without compulsion.

Fair value movement

An accounting adjustment to change the book value of an asset or liability to its market value.

Floor area ratio (FAR) (also known as Plot Ratio)

The ratio of a building's total floor area (zoning floor area) to the size of the piece of land upon which it is built. The terms can also refer to limits imposed on such a ratio.

$$\text{Floor area ratio} = \frac{\text{total amount of usable floor area that a building has, zoning floor area}}{\text{area of the plot}}$$

Gearing

See Loan to Value (LTV).

Gross rental income

The gross accounting rent receivable (quoted either for the period or on an annualised basis) prepared under IFRS which requires that rental income from fixed/minimum guaranteed rent reviews and tenant incentives is spread on a straight-line basis over the entire lease to first break. This can result in income being recognised ahead of cash flow.

Gross Yield

$$\text{Gross Yield} = \frac{\text{Annual Rent}}{\text{Property Value}}$$

IFRS

International Financial Reporting Standards as adopted by the European Union.

Income return

Calculated as net income expressed as a percentage of capital employed over a period.

Interest cover

The number of times net interest payable is covered by underlying profit before net interest payable and taxation.

Loan to value (LTV)

Ratio of principal value of gross debt less cash, short-term deposits and liquid investments to the aggregate value of properties and investments.

Mark-to-market

Difference between the book value of an asset or liability and its market value.

Net operating costs

Property operating expenses and administrative expenses net of fees and other income.

Net rental income

Rental income receivable in the period after payment of direct property outgoings.

Net operating income

Gross scheduled income less vacancy and credit loss and less operating expenses. i.e. Net operating income is the income or cash flows that are left over after all of the operating expenses have been paid. This is often called earnings before interest and taxes or EBIT.

Net yield

$$\text{Net Yield} = \frac{\text{Annual Rent} - \text{Operating Costs}}{\text{Property Value}}$$

Occupancy rate

Estimated rental value of let units as a percentage of the total estimated rental value of the property

Planning consent

Gives consent for a development and covers matters such as use and design. Full details of the development scheme must be provided in an application for full planning consent, including detailed design, external appearance and landscaping before a project can proceed. Outline planning consent establishes the broad outline of the scheme and is subject to the later approval of the details of the design.

Plot Coverage

The percentage of the overall site covered by building footprint.

Plot Ratio

Gross building area divided by the area of the overall site.

Property valuation

In accordance with usual practice, a Company's external valuers report valuations net, after the deduction of the prospective purchaser's costs, including stamp duty land tax, agent and legal fees.

REIT (Real Estate Investment Trust)

REITs are companies which are exempt from corporate taxation on profits from property rental income and capital gains on the sale of investment properties.

Reversion

Increase in rent estimated by the external valuers, where the passing rent is below the estimated rental value. The increases to rent arise on rent reviews and lettings.

Reversion value

The resale price

Site Area

The area occupied by the site

The residual site value

Value of a development is calculated as the estimated (net) development value, less development profit, all development construction costs, finance costs (assumed at a notional rate) of a project to completion and notional site acquisition costs. The residual is determined to be the current site value.

Total Property Return

Calculated as the change in capital value, less any capital expenditure incurred, plus net income, expressed as a percentage of capital employed over the period.

Weighted average debt maturity

Each tranche of a company's debt is multiplied by the remaining period to its maturity and the result is divided by total Company debt in issue at the period end.

Weighted average interest rate

Company loan interest and derivative costs per annum at the period end, divided by total Company debt in issue at the period end.

Weighted average lease term

Average lease term remaining to first break, or expiry, across the property weighted by contracted rental income (including rent-frees). The calculation excludes short-term lettings, residential leases and properties allocated as developments.

Yield shift

A movement (usually expressed in bps) in the yield of a property asset, or like-for-like property, over a given period. Yield compression is a commonly-used term for a reduction in yields.

Appendix – Note on Estimating Discount Rates

In principle, the discount rate used to evaluate a property investment should reflect the risk-adjusted cost of capital of the investor. While this is a straightforward theoretical concept, it is often difficult to come up with a concrete measure of this cost.

For stock and bond investments we can use public market information to estimate the rate of return investors are earning in the market. For capital budgeting decisions, it was argued that the firm should use its weighted average cost of capital as a discount rate.

Property investments have some commonalities with both publicly traded securities and less liquid capital budgeting projects. As such, an amalgam of the techniques used in corporate finance to get a ballpark estimate of the required discount rate can be used.

Always beware, however, of the myth of precision, because one is only getting a rough estimate of the correct discount rate, don't let yourself be fooled into thinking "Well, my NPV is positive €15.5, thus I should accept the project." If a small change in the discount rate you use makes a big difference in your investment decision, be careful!

Risk Premium method

Recall that the overall discount rate for a property, r_p can be broken down as

$$r_p = r_{rf} + r_p,$$

where r_{rf} is the risk free rate (as estimated by the one-year Government security) and r_p is the risk premium investors will demand for holding a risky property asset.

Historical statistics on annual returns suggest that fully-leased, free-and-clear (no debt), institutional investment properties have commanded a 3.5 percent risk premium over one-year T-Bills. Thus, one way to estimate the discount rate for the property is to look at current one-year T-Bill rates and add 3.5 percent. One caveat is that the risk premium is not necessarily stable over time. For example, recently the one-year T-Bill was trading at about 1.5 percent. If the risk premium for property was still at 3.50 percent, this suggests a required return of about 5.00 percent for investment grade property. On the other hand, if the risk premium had increased due to the current economic environment, it would not be unreasonable to expect a 6.00 or 7.00 percent required return on property.

Cap Rate method

An alternative method of estimating discount rates is to use market cap rates. If we assume that a property's net operating income (NOI) will increase at a constant rate for the indefinite future, then the return on the property will be

$$r_p = \text{cap rate} + \text{annual NOI growth.}$$

One reasonable assumption for NOI growth is the expected inflation rate less capital expenditures necessary to keep the property in its current condition. Survey evidence suggests that capital expenditures typically run between one and two percent of building value per year over the long run for most property types.

As an example, if a property type is currently selling at an 6.00 percent cap rate, expected inflation is 2.00 percent, and if capital expenditures run at about 1.50 percent per year, the estimated discount rate for this type of property would be

$$r_p = 6.00 + (2.00 - 1.50) = 6.50 \text{ percent}$$

Accounting for Non-Institutional Quality Properties

The above techniques allow us to estimate overall discount rates for high quality properties that might be held by institutional investors. Smaller properties, class B and C properties, and development properties will typically require higher discount rates. Expected returns from properties like these are generally 100 to 200 basis points (bps) higher. (Recall that a basis point is 1/100th of a percent.).

So in the example above this would result in an r_p of 8.50 percent.

Accounting for the Effect of Leverage

The above techniques allow us to estimate a discount rate for a property as a whole. This discount rate can then be applied to forecasted NOI to calculate the net present value (NPV) of a property investment.

Property investors, however, usually use large amounts of debt to finance their investments. High debt loads imply increased financial risk, which in turn requires a higher discount rate. To estimate a before-tax equity discount rate, r_e , we appeal to the concept of the weighted average cost of capital (WACC). Recall that the overall property discount rate (r_p) is simply the weighted average of the component costs of finance:

$$r_p = \text{LTV } r_d + (1 - \text{LTV}) r_e,$$

Where r_d is the cost of debt (the interest rate) and LTV is the loan-to-value ratio on the property. It is r_e that we want to estimate.

Rearranging this formula gives us an estimate of the before-tax required rate of return for an equity investor:

$$r_e = (r_p - \text{LTV } r_d) / (1 - \text{LTV}).$$

Thus, we can use the techniques above to estimate the required return on the overall property, r_p , and then take the mortgage interest rate, r_d , LTV ratio to estimate r_e .

For the example given in the case study:

$$r_e = (8.50 - 0.75 \times 4.625) / (1 - 0.75) = 20.125 \text{ percent}$$