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Life Cycle Costing (LCC)
An Irish Approach

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Focus on CAPex in Ireland

- Construction – Focus on CAPex
- Traditional Procurement (Design, Bid, Build)
  - Cost Planning
  - Tendering & Procurement
  - Cost Control
  - Final Account
  - Hand Over - Finished

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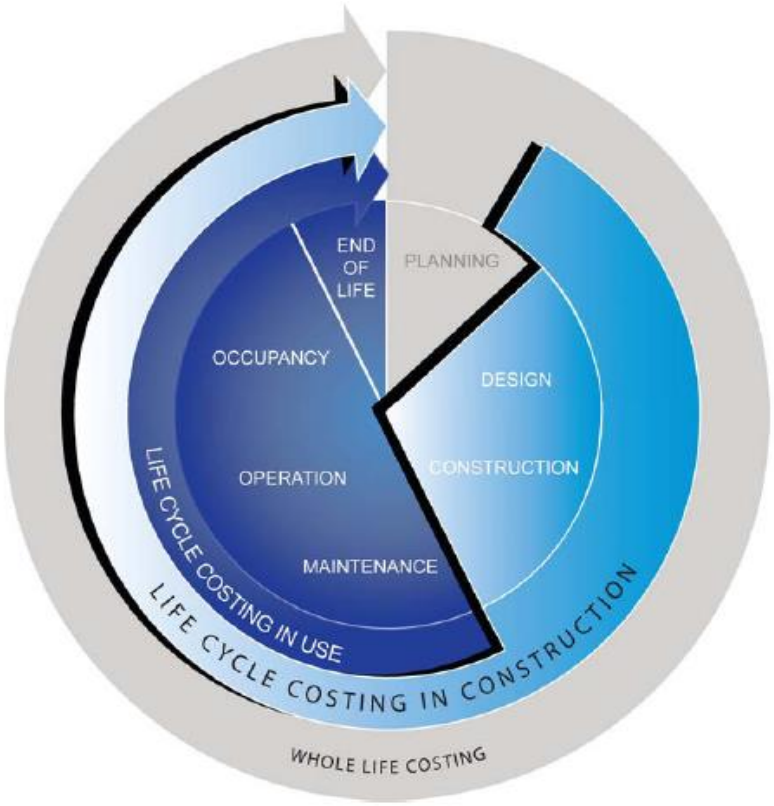
We do QSs need to Expand our Focus

- Focus on OPex and FM
- Focus on Sustainability, Carbon Emissions & Energy Efficiency
- CWMF & OGC
- Latham, Egan, Constructing Excellence, Get it Right Int.
- ISO documents – eg. 19686, 20400, 14067
- ICMS V2
- BIM Roadmaps & Mandates PAS 1192 & ISO 19650
- International Protocols, EU Directives and Local Legislation

(W) Life Cycle Costing (LCC)



LCC *An economic evaluation in which all costs arising from* ***owning operating and maintaining*** *a building over a certain study period or building life cycle are considered to be potentially important. (Fuller & Petersen)*

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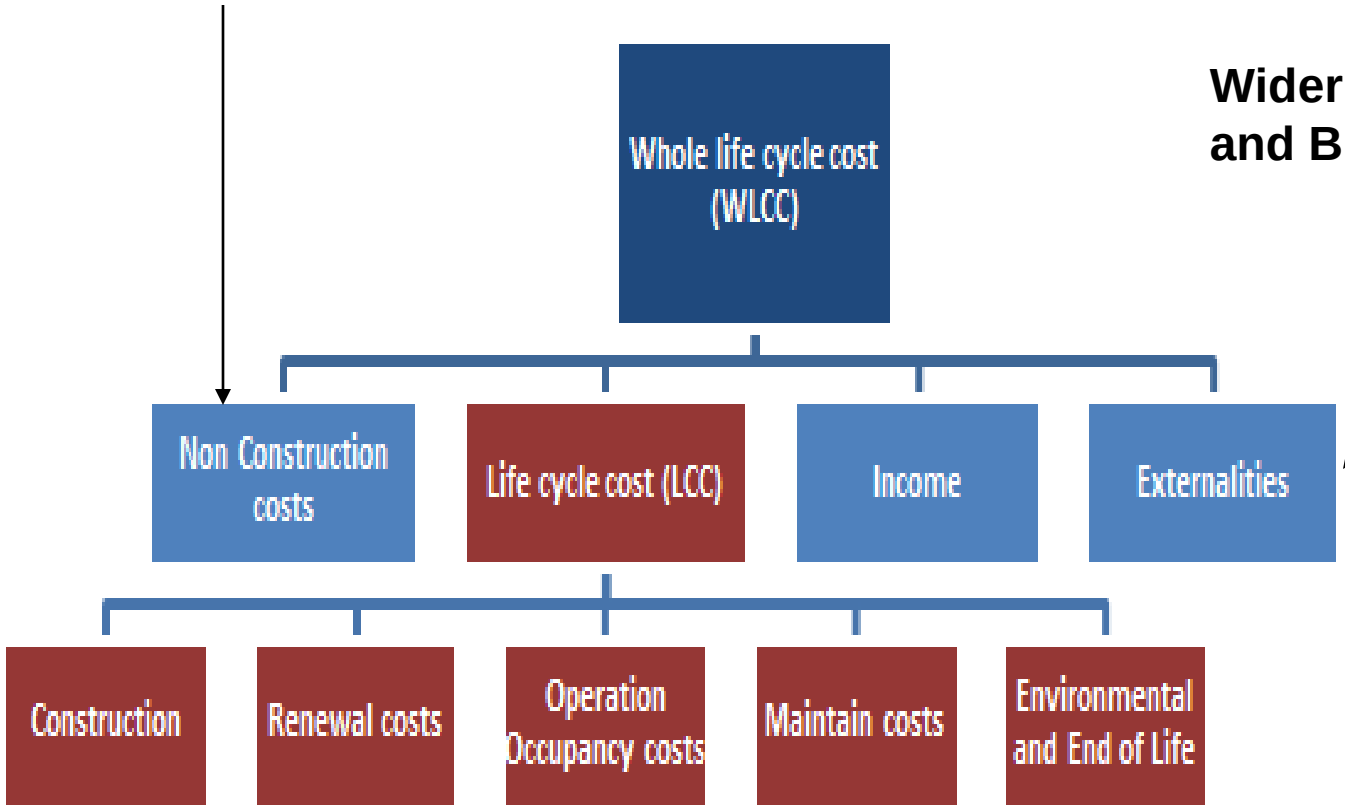
Difference Between LCC & WLCC ISO 19686-5

Land, Finance, Fees



Wider Social, Sustainable and Business Costs

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Why are QSs Concerned

- Matrix for Measuring Green Construction with LCA
- Focusing on IRR / Business Case
- Focus on Operating Costs 1:5:200 (FM)
- Procurement - PPP/PFI & Design Bid Maintain
- BIM (focus on Asset Management)

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Benefits LCC (for the long road)

- **Feasibility & Appraisal (Macro)**
  - Rent Vs Construct
  - Refurbish Vs New Build
  - Traditional Vs Sustainable
- **Design Decisions (Micro)**
  - Component Selection
- **Measuring Sustainability (LEED BREEAM)**
  - Energy Modelling
  - Evaluation on Credits
  - Payback of renewable technologies
- **Asset Management**
  - Budget for the Facilities manager

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Successful Use of LCC in Irish Public Procurement

- **Tendering where Vendor is involved over a longer period than construction**

- Public Private Partnerships (PPPs)
  - (even if its not part of their tender it must be part of their risk analysis)
- Design Build
  - Most Economically Advantageous Tender (MEAT)
  - Contractor influences OPex through their design

Public Procurement in Ireland

Capital Works Management Framework (2008)

- **Guidance Notes 2.2**

‘Planning and Control of Capital Costs’

“**Whole life costs** are an important consideration throughout the design process, and should be integrated at each stage in cost plan development”

Capital Cost Plan = Life Cycle Cost Plan

Problem in Ireland is:

- Unlike many of our European Neighbours
  - **Traditional Procurement Prevails**

- So are we using LCC in Traditional Public Procurement ?
  - **No. (Not in the formulated sense)**
  - **Very Occasionally when client requested**

Barriers to Implementation

- **Contractors don’t have a role in design**
- So Many Variables in Calcs
- Confusion with terminology (LCA, LCC, WLLC)
- Complicated & Longwinded Calcs
- Time it takes
- Access to Life Cycle Cost Databases
- No useful rules of measurement or guidance notes
- Clients not Requesting it/don’t understand it
- What software do I use?
- Training

Opportunities for LCC in Public Procurement

- Incremental Analysis throughout Design Process
  - ICMS / CWMF
- Value Engineering in Design & Component Selection
- Contractor role in VE and Spec Selection
- Parallel Tendering and Specialists w/ Design (especially with M&E)
- Earlier Contractor Involvement (ECI) –
  - Two Stage Tendering (Novation or fee)

LCC in Procurement – Award

EU Directives

Directive 2014/24/EU (EU, 2014)

- LCC no longer restricted to MEAT
- LCC can be included in Low Cost
  - MEAT to include LCC and Externalities (Sustainability, Social)

Opportunity in ICMS

- **LCC in ICMS V2 (Section 2.4)**
- LCC consistent with ISO 19686-5
- LCC with Capital Cost
- ICMS recognises difficulty in LCC and time it takes..
  - LCC may be reported at a lesser level of detail than the underlying analysis in ICMS.

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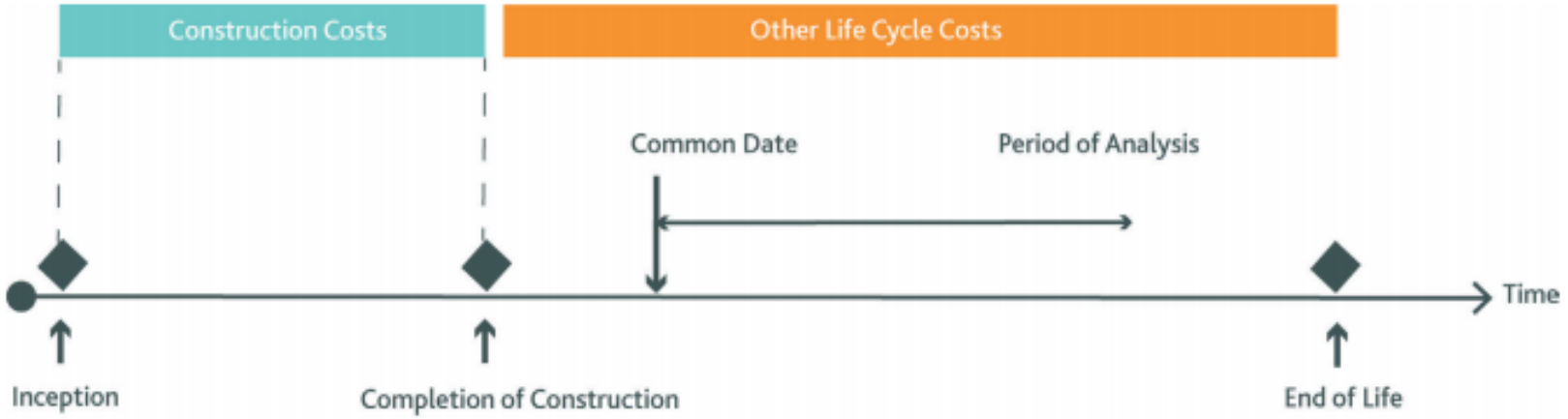
LCC Calculations

- NPV to Common Date
- Base Date

Figure 4: LCC Calculations and Period of Analysis



LCC Calculations

- ICMS in Forecast Costs (Nominal Costs)
- Discounted Costs (NPVs)
- But to Calculate Forecast Costs you need Real Costs
- Not very onerous

Template for Life Cycle Costs for a Project

ICMS INTERNATIONAL CONSTRUCTION MEASUREMENT STANDARDS

- $M NPV = $M as paid × Discounting Factor.
- $M as paid = amount at the time of payment.
- Discounting Factor should take into account the effect of different times of payments more than once.

Cost code	Description	<Insert Project Type>					
		$M as paid	Discounting Factor	$M NPV	$/Qty	% by Category	% of Total
	Project Quantity				(insert Qty)		
					(insert Qty's Attribute)		
	Life Cycle Cost (CC plus NPV of RC, OC, MC, and EC)						**100.0%**
1.	Acquisition Costs (AC) [Part of Non- Construction Costs]						
2.	Construction Costs (CC)						
3.	Renewal Costs (RC)						
4.	Operation Costs (OC)						
5.	Maintenance Costs (MC)						
6.	End of Life Costs (EC)						
1.	**Acquisition Costs (AC)**					**100.0%**	
1.01.	Site acquisition						
1.02.	Administrative, finance, legal and marketing expenses						

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LCC Data

- Biggest Issue in LCC is access to meaningful data
- Data collected and categorised in a myriad of ways
- ICMS lead to consistency, where robust data can be used and preferably shared to introduce more certainty into the prediction and control of LCC

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Summary

- LCC not currently carried out in Traditional Procurement
- LCC in PPP and Design Build
- LCC is in the CWMF
- LCC is incorporated in ICMS
- Knowledge and Training
- Collection of LCC data