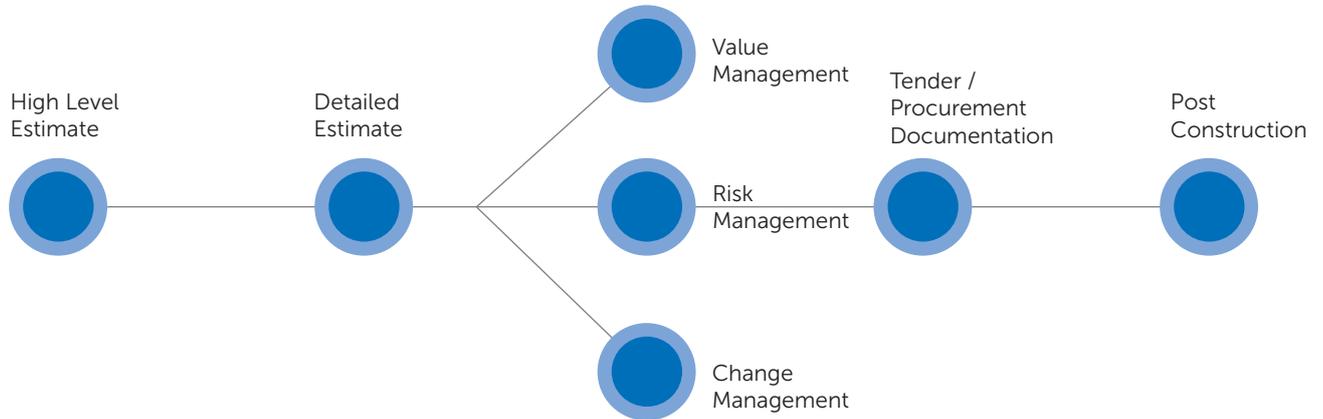


# IRELAND HANDBOOK 2015

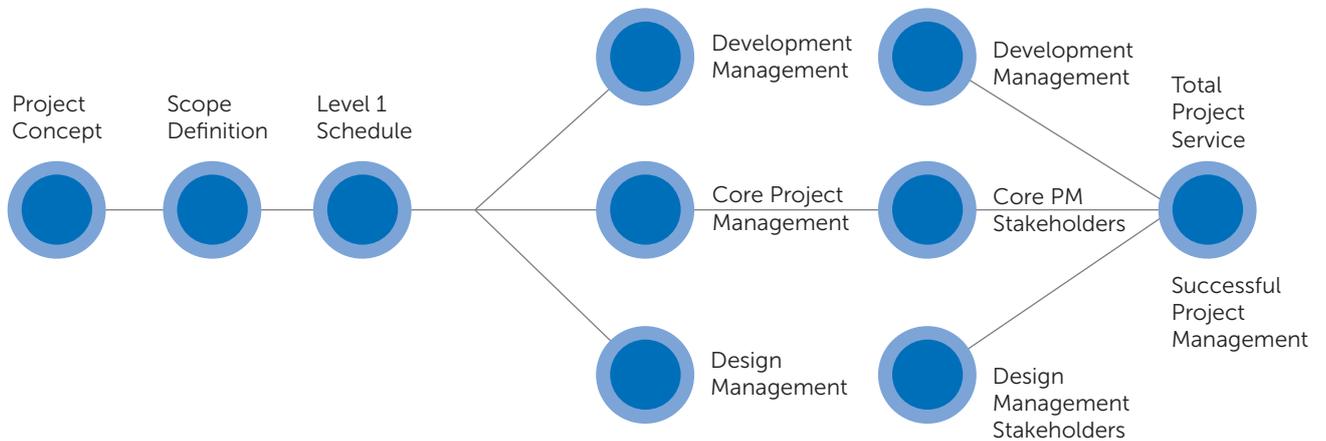


# This is Bruce Shaw

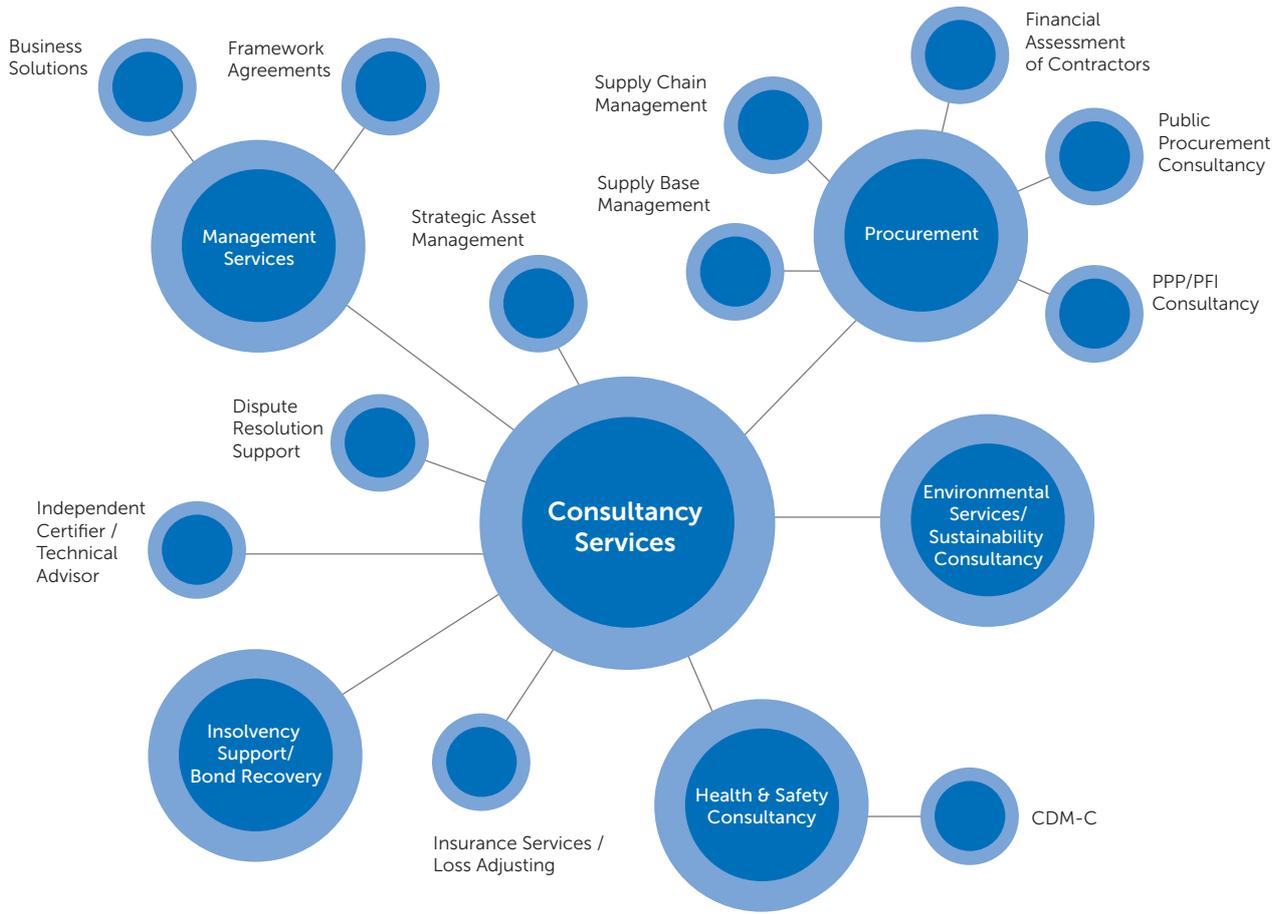
## What we do



## Approach to Cost Control Management



## Approach to Project Management



**Bruce Shaw Consultancy Services**

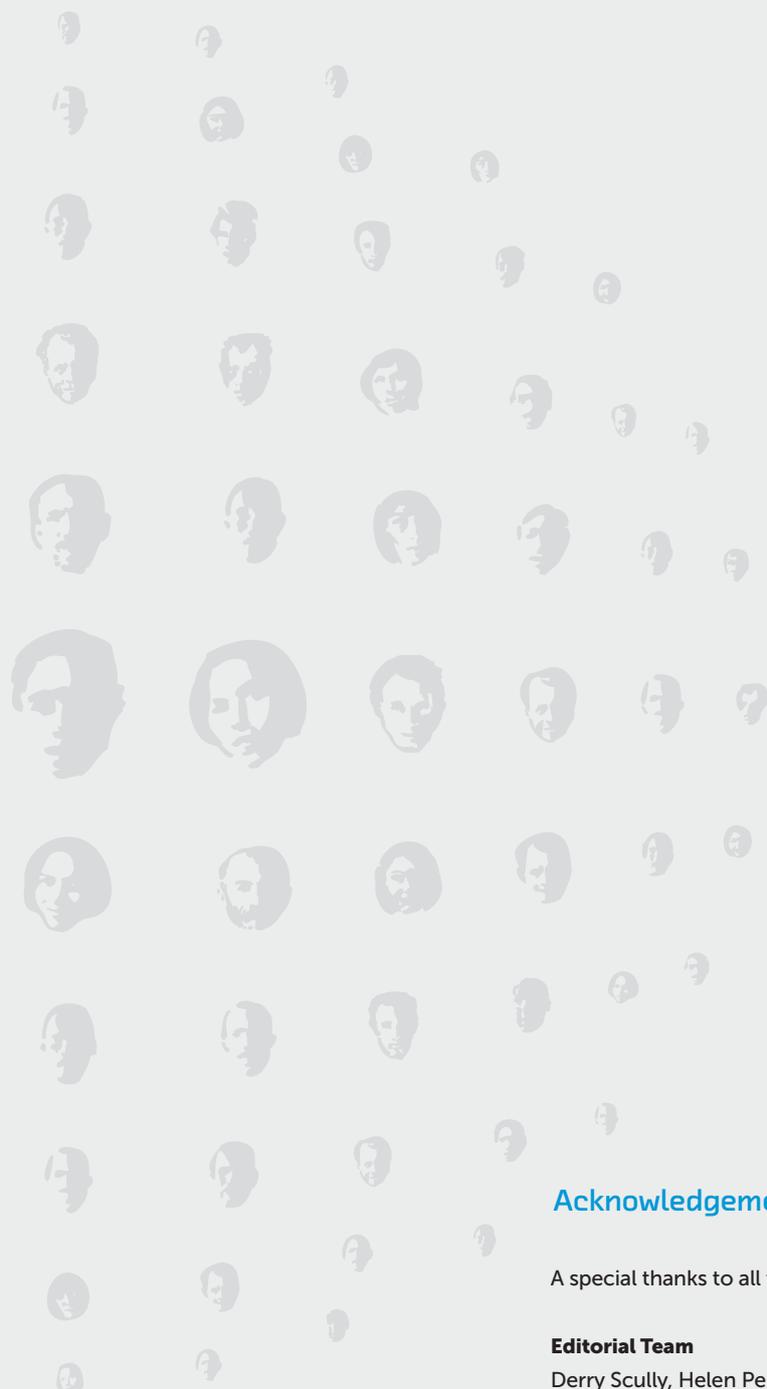


Blackrock Clinic ICU

## Global Expertise, Local Knowledge

With experience that spans four decades and includes projects in all sectors, Bruce Shaw provides the full spectrum of construction consultancy services for major developments both in Ireland and abroad. Working from the earliest concept stages through to project completion, our value-adding services – accredited to the highest international standards – are designed to maximise built asset investment.

With offices in four locations in Ireland – Dublin, Cork, Limerick and Belfast – Bruce Shaw has some 150 people providing expert consultancy services in Ireland while the group has approximately 450 people working in 40 countries from 22 offices around the globe.



## Acknowledgements

A special thanks to all those involved in this year's publication.

### **Editorial Team**

Derry Scully, Helen Pender, Ciara Copeland, Naomi Carroll

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Cover photos

Left: Burlington House

Right: Diageo Brewhouse 4

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## Bruce Shaw Knowledge Centre 2015

Now in its 13th year, Knowledge Centre 2015 combines our renowned global expertise and knowledge with up-to-date construction data from around the world. Reviewing 12 international markets; Global, Europe, Ireland, the UK, the Middle East, the United States, the Caribbean, India, Australia and New Zealand, South East Asia, China and Africa, we cover areas such as levels of economic activity, indices of construction costs, trends in construction output, labour costs and much more.

The Topical Issues section features industry experts expressing their views on a number of global issues of current interest and relevance to construction professionals today. Subjects range from new ways of delivering major projects, to international outsourcing, to the benefits of independent project auditing.

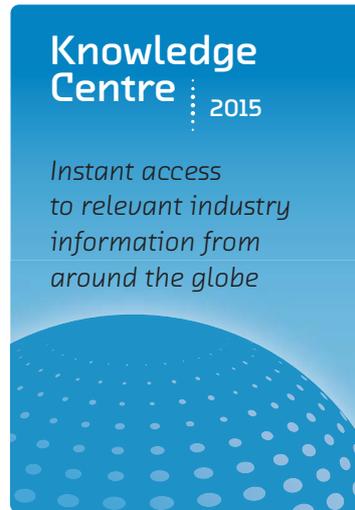
Knowledge Centre 2015 aims to provide busy construction professionals with instant access to the most relevant industry information.

The content of this Handbook is based on the Ireland section of our overall Knowledge Centre.

We hope you find it resourceful.

### Derry Scully

Chairman Bruce Shaw Dublin

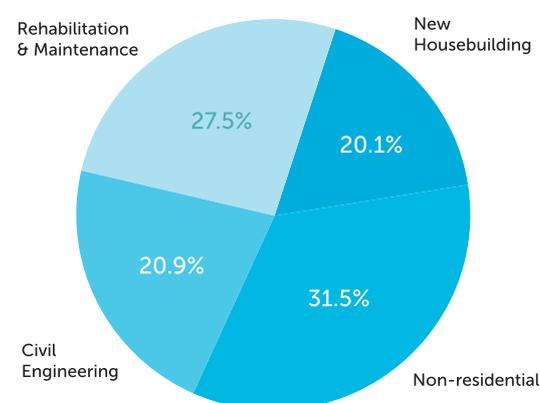


[www.bruceshaw.com/knowledgecentre](http://www.bruceshaw.com/knowledgecentre)

## Global Residential Construction Market – Is the Boom and Bust Cycle Inevitable?

One of the most basic human needs is shelter. With the world's population now exceeding 7 billion, the provision of shelter in the form of housing is an enormous global industry. Due to its nature residential construction does not tend to get the global recognition that major infrastructure projects or commercial buildings attract. Nonetheless it is a significant portion of the construction industry; the graph below indicates that residential construction including refurbishment and maintenance accounted for over 47% of all construction activity in Europe in 2013. In the United States of America 36% of all construction in 2014 was on private residential construction alone.

Activities 2013 by segment



Source: Source: European Construction Industry Federation

Residential construction is driven by demographic trends, household income, housing prices or rent and credit conditions. Historically countries have grappled with different methodologies to ensure sustainable housing policies. The failures of these policies on a global basis gave rise to the recent difficult and costly boom and its subsequent bust phase, resulting in disastrous consequences for people on both a personal and economic level.

In the US The US National Mortgage Association – Fannie Mae was established during the Great Depression in an attempt to raise levels of home ownership and availability of affordable housing. Its implicit government backing resulted in it's large share of the residential mortgage market. It is ironic that this institution, set up to assist with home ownership, was at the centre of the financial freefall in the recent recession with devastating consequence for home ownership and the construction industry. The intervention by the US government to rescue Frannie Mae and Freddy Mac should remove any doubt of the significant importance the residential market can have on the world economy. GDP growth in 2015 is expected to run at 3% in the United States and this together with favourable financial conditions is being driven by a healthier housing market.

In China's larger cities house prices show signs of overvaluation while many smaller cities are now experiencing an oversupply of housing as local governments promoted large scale development to boost growth and used land sales to finance local government spending.

In Australia, government initiatives and booming commodities resulted in minimal impact of the Global Financial Crisis. The housing market, partially driven from Chinese investment, is booming in the large cities of Sydney, Melbourne and Perth. Significantly other areas such as the Gold Coast have a glut of residential properties and the construction industry has been depressed for some time.

Singapore, partly due to lessons learned during the Asian Financial Crisis, was largely unaffected by the Global Financial Crisis. In Singapore 85% of the population live in public housing. Given the size of the population and the relatively small land mass, public housing comes in the form of high rise apartments. Due to the policy whereby public housing can be purchased, 95% of the population currently owns the apartments they occupy. Public policy allows for mortgages to be paid through pension savings. The Housing Board has strict conditions for the occupation and resale of units, thus ensuring a regulated market accessible to all and avoiding the boom and bust cycle. However Singapore's housing policy is due an overhaul to reflect its aging population.

So how do we protect ourselves from this boom and bust cycle? Are there lessons to be learned from other nations?

Policies such as limits on the loan to value and debt –service – to income ratios, as recently implemented by the Irish Central Bank effectively cool off both house price and credit growth in the short term. However these measures do not affect foreign investors who are outside these policies. Other measures such as Stamp Duties are effective in controlling foreign investors.

Undersupply has the greatest impact on house pricing and needs to be addressed through structural policies such as urban planning measures.

Recovery in the global housing market is following a two speed pattern with some economies rebounding after modest declines in values and others still recovering from sharper declines. In the recovering countries, which include Japan, Russia, South Africa, Mexico and much of Europe, with the exception of Austria, Germany, Sweden and Switzerland; the challenge is to address the underlying cause of the unsustainable boom and bring about a more robust recovery.



# Market Review: Ireland



## A review of activities in Ireland

The output of the Irish construction industry peaked in 2007 at over €38 billion, representing almost 24% of GNP and employing 400,000 workers. These were unsustainable numbers but the crash that followed was brutal and has left an industry with problems as it struggles to recover. Output of the industry bottomed out in 2012 at just over €9 billion, which was a staggering fall of 76%. A small recovery took place during 2013 and this accelerated in 2014. Output in 2014 rose to €11 billion, which is 7.1% of GNP and employment is back to approximately 110,000. This level of output is still well below the recognised norm of 12% of GNP for developed countries.

The recovery in construction followed the increase in activity in the property market which commenced earlier. The recovery is most apparent in the Greater Dublin Area but will gradually move out from there, initially to the other urban areas. The recovery has been led by expenditure on Foreign Direct Investment projects and by renewed activity in the commercial offices sector. Public sector expenditure has proceeded largely as planned and the Government have announced a number of measures to stimulate activity. There has also been increased activity as Irish Water rolled out its controversial water metering programme.

Residential construction is a major component of the overall industry. The number of residential units built per year peaked in 2006 at over 90,000 units but this dropped to just over 8,000 units in 2013 and approximately 10,000 in 2014, well below the required volume of 26,000 units per year for 2015-2018, predicted by the ESRI. In late 2014, the Government also announced plans to invest €2.2 billion on social housing over the next 3 years as part of the Social Housing Strategy. These initiatives and pent-up demand will greatly aid the recovery of construction generally.

The recovery in the commercial office sector is continuing in response to rapidly rising rental levels in Dublin in particular and will be assisted by a number of NAMA initiatives including Project Wave in the Dublin Docklands and the redevelopment of the Bolands Mills site in Barrow Street. The IDA continue to attract FDI companies to Ireland and high-tech industrial projects planned for the near future include more new datacentres for major multi-nationals and a major redevelopment by Bristol-Meyers Squibb. It is hoped that recent tax announcements in Europe and the US will not impact on the IDA's ability to attract major overseas companies in future.

There are however a number of challenges and risks facing the construction industry recovery. These include both global concerns such as instability in the Euro area and local issues, primarily around funding and particularly skills shortages. As the industry contracted so dramatically it has lost large numbers of people in the design professions, site management and skilled craftsmen. These will take a number of years to replace. Construction prices are also recovering and construction inflation levels are running well ahead of general inflation. The weakness of the Euro though is offsetting these increases for investors from Dollar and Sterling areas.

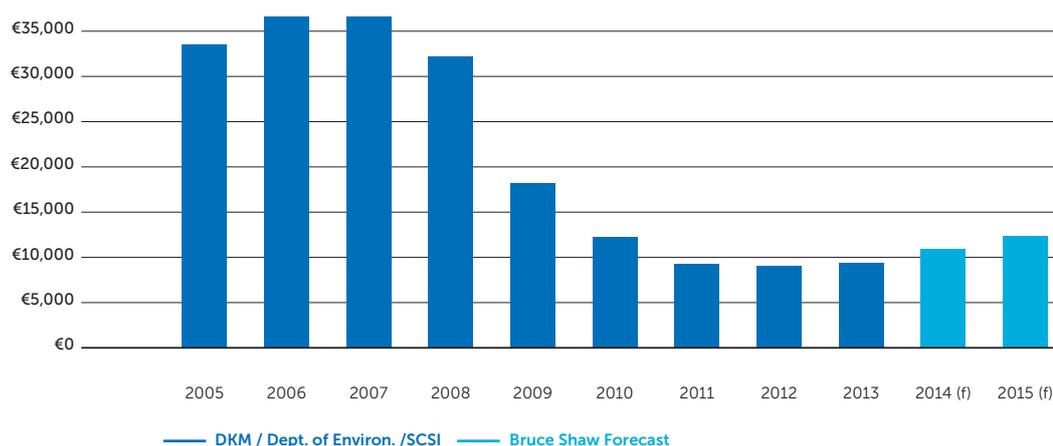
*Output in 2014 rose to €11 billion, which is 7.1% of GNP and employment is back to approximately 110,000.*





UCD O'Brien Centre for Science

### Value of Construction Output €m 2005–2015 (f)



Source: DKM / Dept of Environment / Forfás / Bruce Shaw

### Construction Output 2008–2015 (f)

	2008	2009	2010	2011	2012	2013	2014(f)	2015(f)
Value of Output at Current Prices (€m)	32,593	18,048	12,189	9,408	9,107	9,538	10,990	12,515
Change in Value of Output (%)	-16%	-45%	-32%	-23%	-3%	5%	15%	14%
Construction Output as % of GNP	20.2%	12.9%	8.8%	6.8%	6.4%	6.5%	7.1%	7.6%

Source: DKM / Dept of Environment / Forfás / Bruce Shaw(f)

### Gross National Product (GNP) 2008–2015 (f)

	2008	2009	2010	2011	2012	2013	2014	2015(f)
GNP at Current Prices (€m)	161,033	139,597	138,503	138,915	141,229	147,506	155,400	164,800
% Change in GNP	-3.9%	-13.3%	-0.8%	0.3%	1.7%	4.4%	5.4%	6.0%

Source: CSO / ESRI(f)

## Government Capital Expenditure

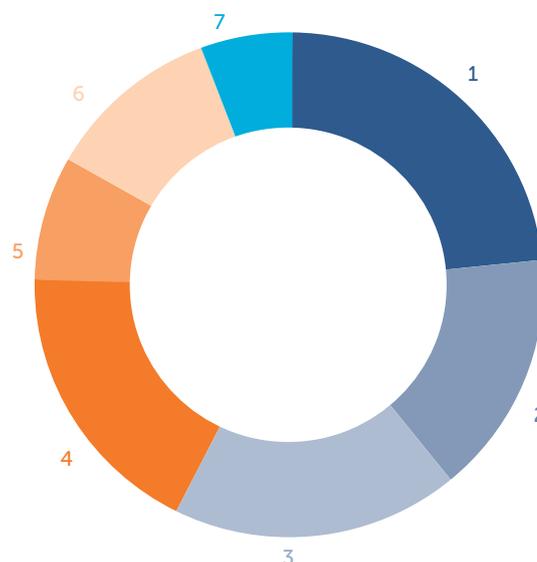
Capital Envelope (€ millions)	Direct Exchequer Capital Funding			Total Capital Investment 2014 to 2016 €million
	2014	2015	2016	
Agriculture, Food & the Marine	184	168	168	520
Arts, Heritage & the Gaeltacht	38	36	36	110
Children & Youth Affairs*	35	8	8	52
Communications, Energy & Natural Resources	80	79	77	236
Defence	8	8	8	24
Education and Skills	540	475	415	1,430
Environment, Community & Local Government	311	331	334	976
Finance Group	5	5	5	15
Foreign Affairs and Trade Group	7	2	2	11
Health Group	397	390	390	1,177
Jobs, Enterprise & Innovation	442	454	451	1,347
Justice Group*	62	62	62	185
Public Expenditure & Reform (less OPW)*	10	1	1	11
OPW	100	100	100	300
Social Protection	19	9	7	35
Transport, Tourism & Sport	899	818	818	2535
Investment Funded by National Lottery Licence	200	-	-	200
Unallocated Reserve*	-	307	374	680
<b>Total</b>	<b>3,335</b>	<b>3,252</b>	<b>3,255</b>	<b>9,842</b>
<b>Total Investment as a % of GNP</b>	<b>2.40%</b>	<b>2.30%</b>	<b>2.20%</b>	

\* Rounding affects total

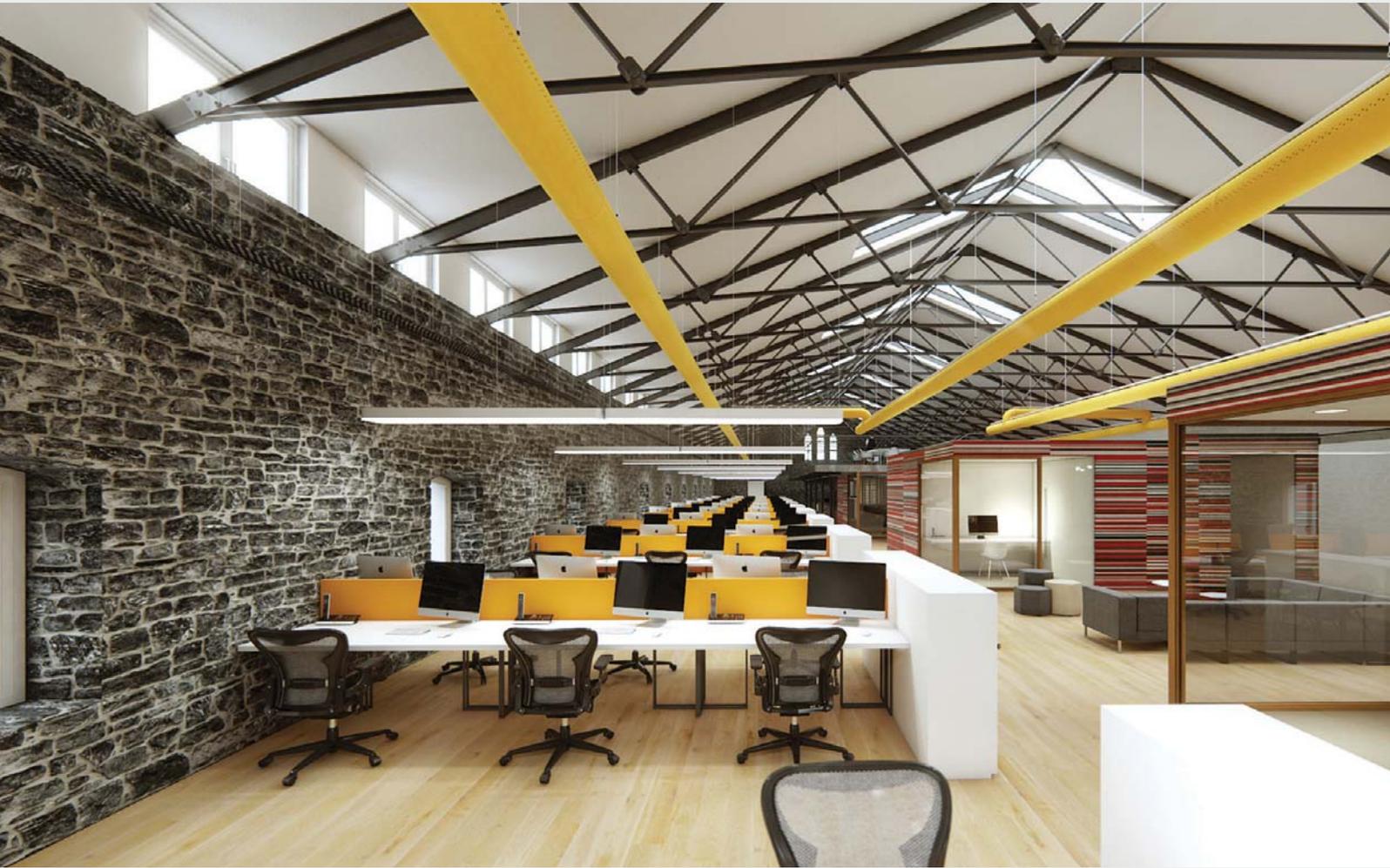
Source: Department of Public Expenditure & Reform

## Gross Voted Capital Expenditure Where the overall €3.6bn is going in 2015

- 1. Road Transport 21%
- 2. Enterprise 14%
- 3. Health 16%
- 4. Education 16%
- 5. Public Transport 7%
- 6. Housing 10%
- 7. Agriculture 5%



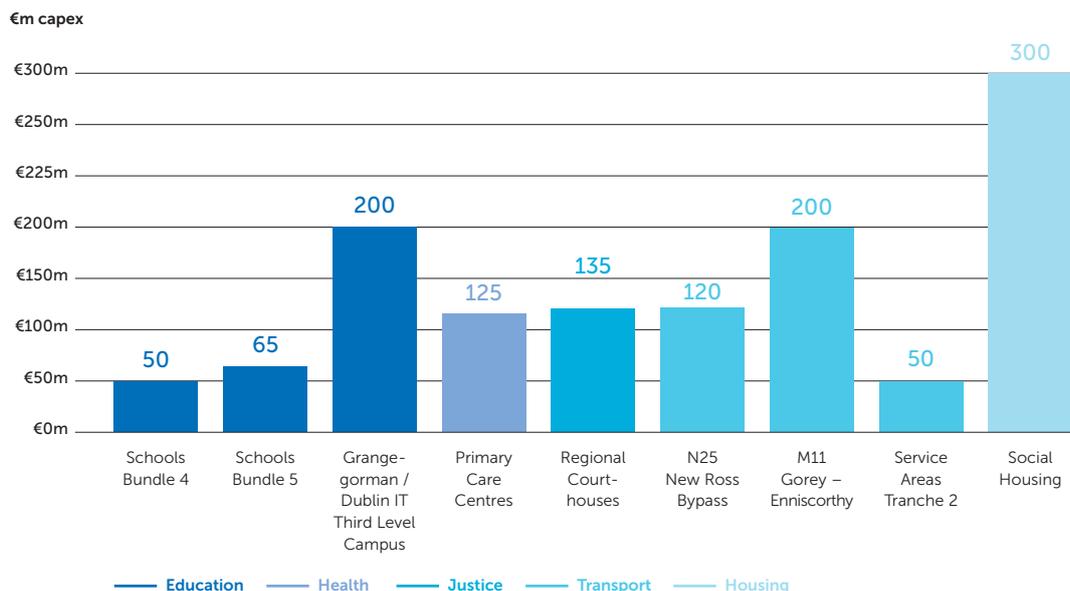
Source: Department of Public Expenditure & Reform



Office fit-out, client confidential

PPP Programme

€1.4 billion Stimulus PPP Programme



€2.2 billion Stimulus PPP Programme

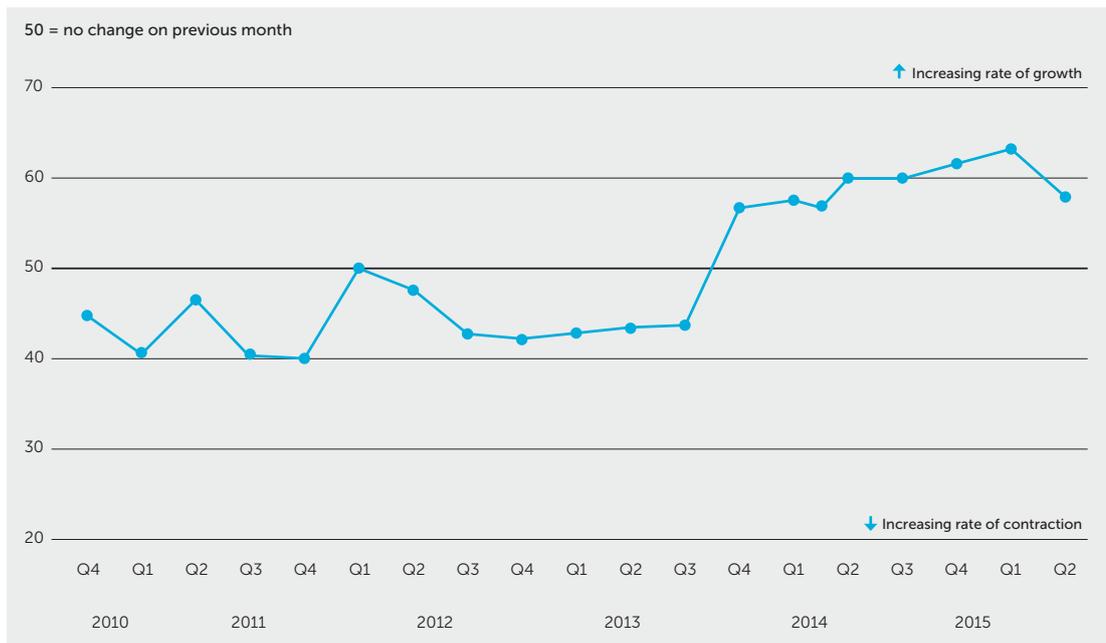
Education	c. €50m capex	School Bundles 4: 4 post primary schools
	c. €65m capex	School Bundles 5: 6 schools; 4 post primary, 1 primary & 1 further education
	c. €200m capex	Grangegorman /Dublin IT Third Level Campus: Part consolidation of Dublin Institute of Technology onto a new campus
Health	c. €125m capex	Primary care centres: c. 12 sites to be developed nationwide
Justice	c. €135m capex	Regional Courthouses: 7 locations identified (Cork, Drogheda, Letterkenny, Limerick, Mullingar, Wexford & Waterford)
Transport	c. €120m capex	N25 New Ross Bypass: 14.6km of dual carriageway, 1.2km of single carriageway including an extrados bridge of c.900m
	c. €200m capex	M11 Gorey - Enniscorthy: 28km new build motorway
	Not available	Service Areas Tranche 2: Athlone, Kiltcullen and Gorey
Social	c. 300m capex	Development of up to 1,500 social housing units - availability based scheme(s)

PPP Projects Closed

11 major inter-urban motorways / by passes
5 Education PPPs, including 23 schools delivered under 1 pilot scheme and 4 subsequent schemes
International Convention Centre
Criminal Courts Complex
Service Areas Tranche 1
Dublin Waste to Energy

Source: National Development Finance Agency  
 Department of Public Expenditure and Reform  
 Various Government Websites

## Construction Purchasing Managers Index Report



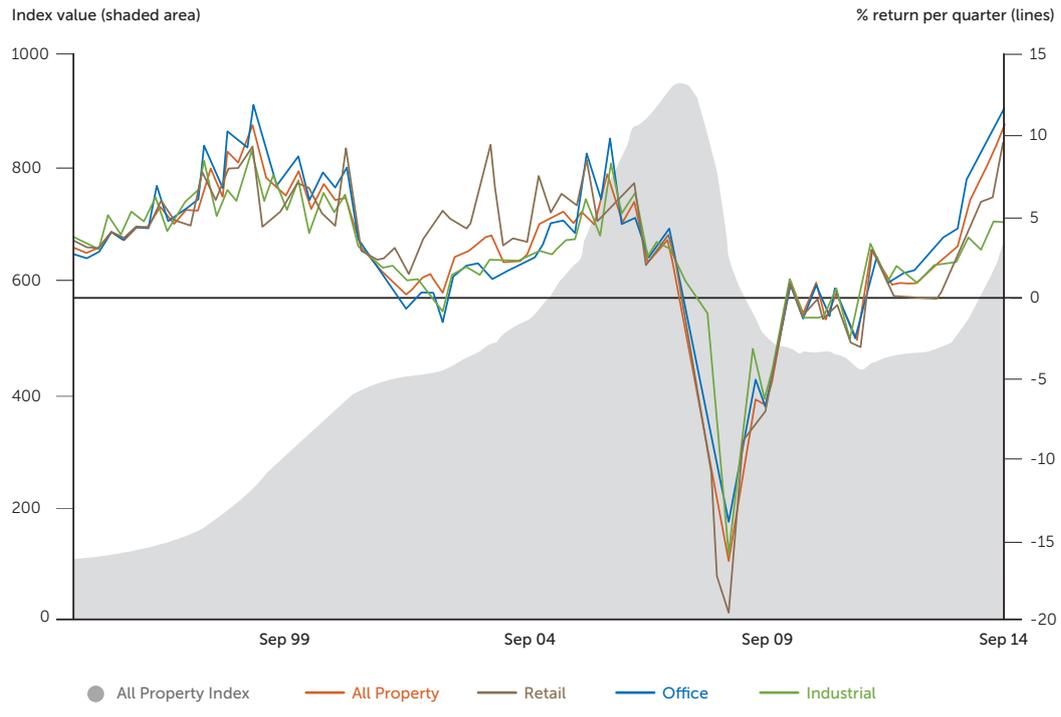
Ulster Bank Construction PMI	Dec 13	Jan 14	Mar 14	Jun 14	Dec 14	Jan 15
Total Activity (graphed above)	58.3	56.4	60.2	59.9	63.1	57.1
Housing	63.2	59.8	59.9	61.3	61.4	54.4
Commercial	62.3	59.3	61.3	59.4	63.3	61.6
Civil Engineering	43.2	37.3	44.1	45.1	57.4	54.5

Source: Ulster Bank



Hewlett Packard, Galway

### Historical Property Performance Total Return % Per Quarter

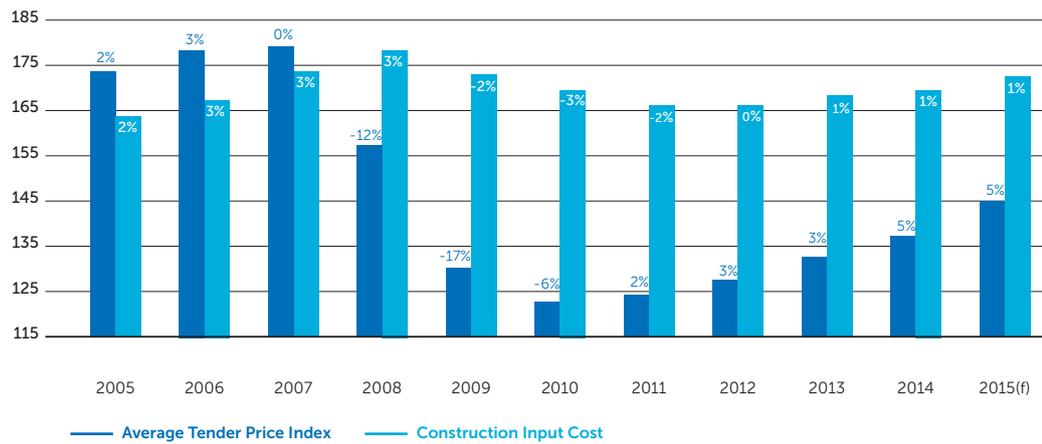


Source: SCSII/IPD Ireland Quarterly Property Index



Rosemont School

## Bruce Shaw Tender & Cost Indices



2014 saw the first significant narrowing of the gap between tender prices for construction projects and input costs of labour and materials. Bruce Shaw's research shows that, on average, tender prices rose by 5% during 2014 while, despite some variances on individual material costs, construction input costs rose on average by only 1%.

Despite steady but modest increases in prices over recent years, the adjoining graph illustrates that there is still a large gap between tender prices and input costs, which have only fallen a small amount from their peak in 2008. These indices represent average annual changes across projects that Bruce Shaw are working on and they reflect the reality that pricing levels remain very competitive, although, as activity grows, there is more reality coming into the marketplace.

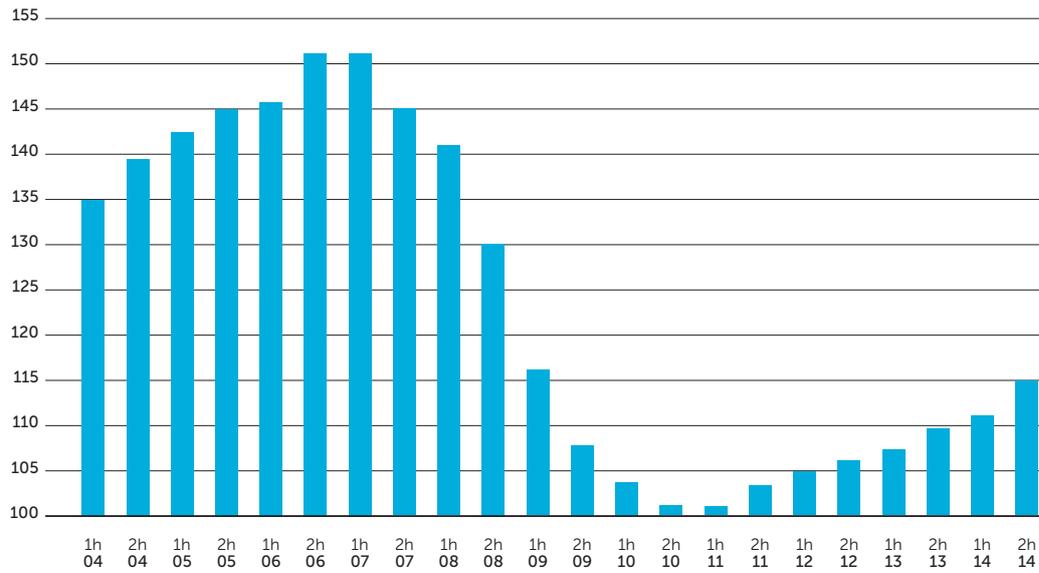
The increase in construction activity, witnessed particularly in the Greater Dublin Area during 2014, coupled with an increase in tender prices has given rise to new challenges when evaluating potential construction projects. Firstly, it is important once again to factor future construction inflation into feasibility studies and secondly, we are increasingly seeing a shortage of bidders for specialist packages, particularly curtain walling and glazing.

We expect that construction tender prices will continue to increase during 2015 and are forecasting an increase of 5% per annum for the next couple of years.



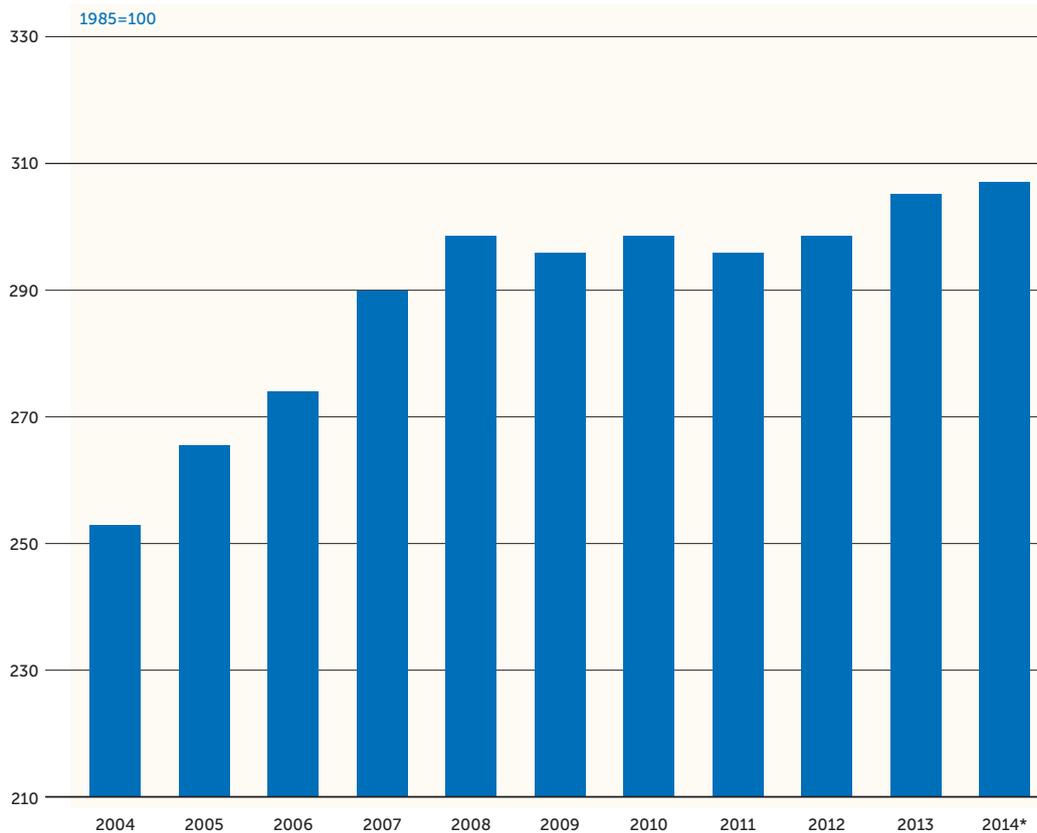
Primark HQ, Dublin

### SCSI Tender Price Index 2004–2014



Source: Society of Chartered Surveyors Ireland

### SCSI Construction Cost Index

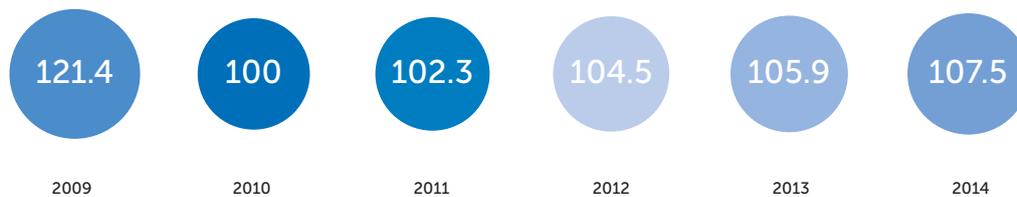


\* average to year end August

Source: Society of Chartered Surveyors Ireland

## Wholesale Price Index Building Materials

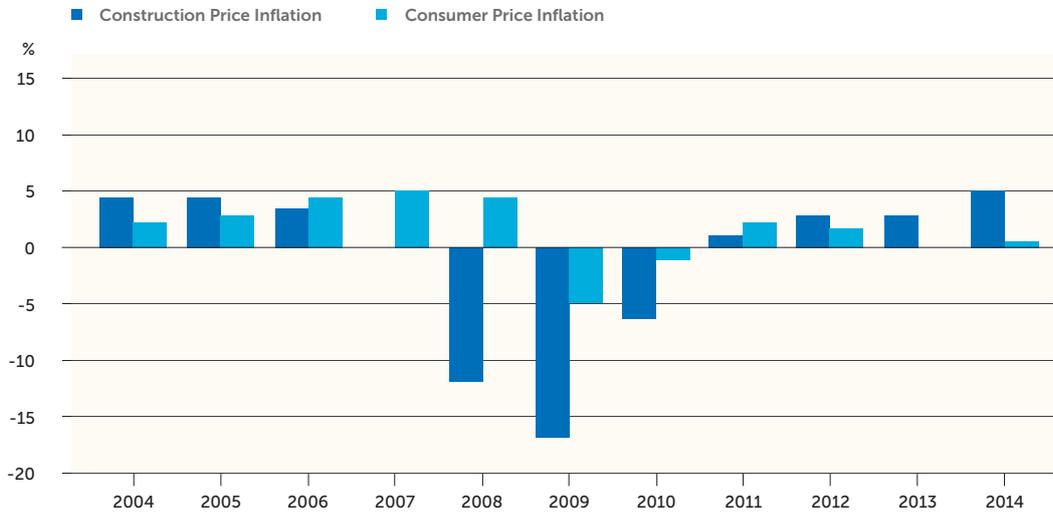
2010 = 100



Source: Central Statistics Office

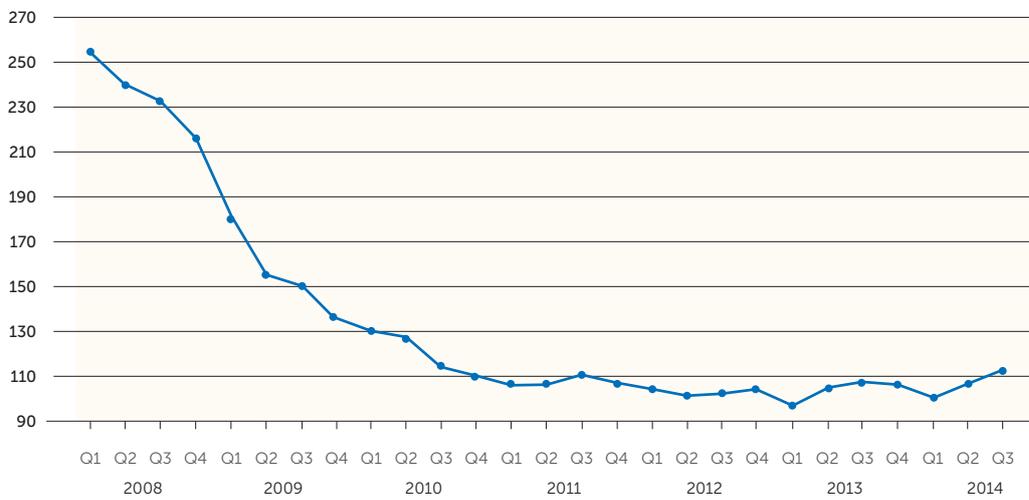


### Consumer vs Construction Price Inflation 2004-2014



Source: CSO / Bruce Shaw

### Employment in Construction (000s)



Source: CSO



St Patrick's College, Drumcondra

## Bruce Shaw Average Irish Construction Costs 2015

The average construction costs table is generated using Bruce Shaw's Cost Database and sets out typical building construction costs. Our database is the largest construction cost database in Ireland.

Average Costs	Cost Range			Including M & E Range
<b>Commercial Offices</b>				
<b>Suburban Naturally Ventilated</b>				
Shell & Core	€1,200	€1,600	per sq.m.	10-15%
Developer Standard	€1,300	€1,700	per sq.m.	15-20%
Extra for Air Conditioning	€170	€350	per sq.m.	-
<b>City Centre Air Conditioned</b>				
Shell & Core	€1,600	€2,300	per sq.m.	15-20%
Developer Standard	€1,800	€2,500	per sq.m.	20-25%
<b>Office Fit Out</b>				
95% Open Plan, No Catering	€455	€700	per sq.m.	20-30%
75% Open Plan, Limited Catering	€650	€850	per sq.m.	20-30%
60% Open Plan, Full Catering	€850	€1,300	per sq.m.	25-35%
Corporate HQ	€1,400	€1,700	per sq.m.	25-35%
Open Plan Work Station	€1,050	€2,900	each	-
<b>High Tech Industrial</b>				
Shell & Core	€850	€1,400	per sq.m.	20-25%
Developer Standard	€750	€1,400	per sq.m.	25-45%
<b>Residential</b>				
Estate House (Approx. 100 sq.m)	€1,050	€1,300	per sq.m.	10-20%
Developer Standard Apartments	€1,300	€1,950	per sq.m.	10-20%
Individual House Rebuilding Costs	<a href="#">(see chart - House Rebuilding Costs per sq.m)</a>			
<b>Shopping Centres</b>				
Anchor Unit	€700	€850	per sq.m.	10-15%
Unit Shops	€850	€1,300	per sq.m.	10-15%
Mall	€1,550	€2,750	per sq.m.	20-25%
Retail Fit Out	€1,200	€1,700	per sq.m.	25-30%
<b>Site Development Business Parks</b>				
Roads & Primary Services	€160,000	€500,000	per hectare	
<b>Warehouses</b>				
Without Offices	€600	€750	per sq.m.	8-12%
With 10% Offices	€700	€1,100	per sq.m.	10-15%
<b>Healthcare</b>				
Acute Hospitals, Average Costs	€2,450	€2,900	per sq.m.	20-30%
Ward Blocks	€2,050	€2,450	per sq.m.	20-25%
General Operating Theatres	€3,650	€6,900	per sq.m.	45-60%
Nursing Homes	€1,800	€2,650	per sq.m.	20-25%
Accident & Emergency	€2,600	€3,650	per sq.m.	25-30%

Average Costs	Cost Range			Including M & E Range
<b>Car Park</b>				
Surface	€1,080	€1,400	per space	-
Multi-Storey	€9,100	€18,200	per space	-
Single Level Basement	€13,100	€29,000	per space	-
Double Level Basement	€17,050	€37,500	per space	-
<b>Education</b>				
Primary Level (DOE )		€1050*	per sq.m.	10-15%
Second Level (DOE)		€1050*	per sq.m.	15-20%
Third Level	€1,450	€2,350	per sq.m.	20-25%
<b>Leisure</b>				
Hotel Building	€1,550	€2,650	per sq.m.	25-35%
FF&E	€300	€700	per sq.m.	-
Restaurant	€1,650	€2,500	per sq.m.	25-35%
Cinema	€1,300	€2,150	per sq.m.	20-30%
Sports Hall	€950	€1,450	per sq.m.	10-15%
Swimming Pool	€2,100	€2,900	per sq.m.	20-35%
<b>Municipal</b>				
Fire Station	€1,950	€2,350	per sq.m.	15-25%
Prison	€1,800	€2,560	per sq.m.	20-30%
Courthouse	€2,650	€3,300	per sq.m.	20-30%

**Notes:**

- Costs are based on January 2015 prices.

- Average costs as indicated should not be used for insurance valuation purposes. The costs are representative of typical specifications for each type of project. Unique designs or challenging sites may not be within the cost range shown. The rates shown are average construction build only costs and do not include VAT, professional fees or allow for future inflation.

\*Basic Building Cost only (incl. VAT). External allowances of 12.5% and abnormal costs should be added.



LXV, St. Stephen's Green

## Basic Hourly Wage Rates

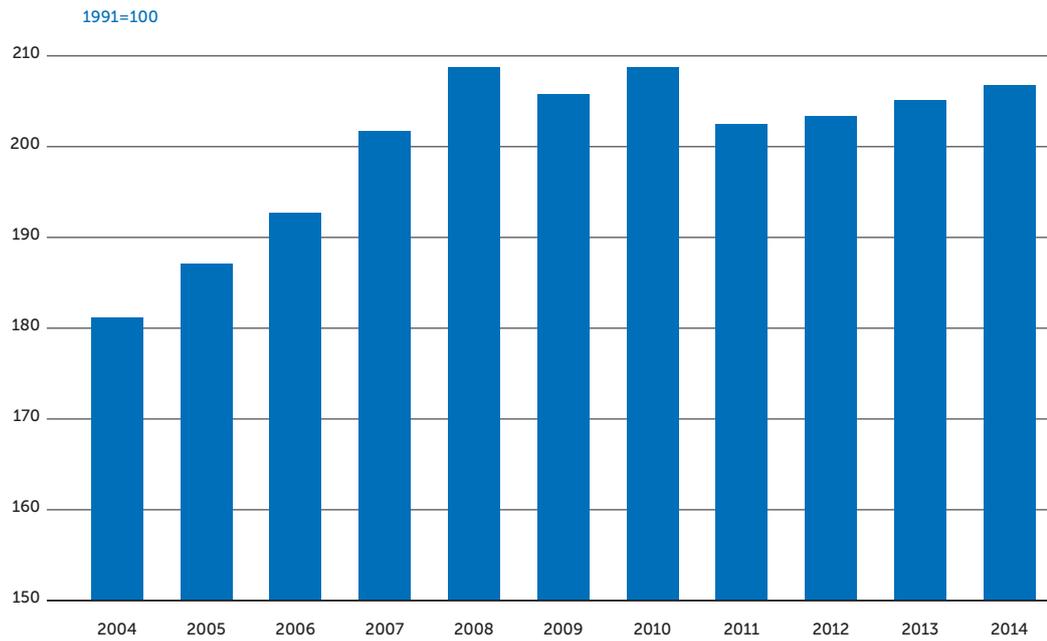
	Craftsman	General Operative			
		Grade A	Grade B	Grade C	Grade D
1st October 2005	€16.85	€16.34	€15.33	€14.83	€13.48
1st April 2006 (3%)	€17.36	€16.84	€15.80	€15.28	€13.89
1st October 2006 (2%)	€17.71	€17.18	€16.12	€15.58	€14.17
1st July 2007 (2.5%)	€18.15	€17.61	€16.52	€15.97	€14.52
1st January 2008 (2.5%)	€18.60	€18.04	€16.93	€16.37	€14.88
4th February 2011 (-7.5%)	€17.21	€16.69	€15.66	€15.14	€13.77

Source: Registered Agreement for the Construction Industry

Note: During 2013 Registered Employment Agreements were declared unconstitutional so the above rates are no longer legally binding.



## House Construction Cost Index



*Note: The House Building Cost Index monitors labour costs in the construction industry and the cost of building materials. It does not include items such as overheads, profits, interest charges or land development. The labour costs include insurance cover and the building material costs include VAT. the type of construction covered is a typical 3 bed-roomed, 2 level local authority house.*

*Source : Central Statistics Office*

## Basic Hourly Wage Rates – Mechanical & Electrical

### Mechanical



### Electrical



Source: MEBSA / ECA

## Irish Main Contractors Turnover

2014 Rank	2013 Rank	Contractor	Revenue €m	Revenue €m	Revenue €m
			Global 2014	of which Irish	Global 2013
1	1	John Sisk & Son Ltd.	898.10	381.60	745.90
2	2	BAM Contractors Ltd.	360.00	309.60	306.29
3	9	John Paul Construction Ltd.	133.80	81.60	72.50
4	3	Roadbridge Ltd.	126.00	63.00	136.00
5	5	Collen Construction Ltd.	120.90	115.06	95.40
6	8	Bennett (Construction) Ltd.	114.00	85.50	94.50
7	4	P.J. Hegarty & Sons Ltd.	111.00	94.00	94.00
8	7	J.J. Rhatigan & Co Ltd.	99.00	99.00	81.17
9	6	Walls Construction Ltd.	89.12	89.12	82.06
10	-	Ardmac Limited	82.00	45.00	60.00
11	-	SIAC Construction Ltd.	60.00	35.40	73.89
12	10	MAC Interiors	51.30	30.78	22.40
13	12	Stewart	32.05	32.05	26.51
14	11	Glenman Corporation Ltd.	22.54	17.35	17.13
15	-	Precision Construction Limited	21.78	21.78	6.78
16	-	Flynn Management & Contractors	17.24	17.24	8.84
17	-	MDY Construction Ltd.	17.02	17.02	13.01

Note: Ranked on Global Turnover

Source: Individual Companies' Auditors / Companies Registration Office

## Irish Services Subcontractors Turnover

2014 Rank	2013 Rank	Firm	Revenue €m	
			Global 2014	Global 2013
1	1	Mercury Engineering Group	525.00	498.50
2	2	Jones Engineering Ltd.	302.00	226.00
3	3	Dornan Engineering Ltd.	169.00	135.63
4	5	Kirby Group Engineering Ltd.	120.00	90.49
5	4	Suir Engineering Ltd.	87.94	128.95
6	6	L. Lynch & Co. Ltd.	55.14	52.02
7	8	Winthrop Engineering Ltd.	53.00	32.29
8	7	Designer Group	50.32	42.90
9	9	Lynskey Engineering Ltd.	47.00	16.05
10	10	Precision Electric (Ireland) Ltd.	15.11	14.22
11	11	The FKM Group	14.12	8.54
12	-	Haughton & Young Ltd	8.03	4.32
13	12	T. Bourke & Co. Ltd.	6.50	7.78

Note: Ranked on Global Turnover

Source: Individual Companies' Auditors / Companies Registration Office



### Annual Housing Completions 2004–2014

	Social	Private	Total
2004	5,146 6.70%	71,808 93.30%	76,954
2005	5,559 6.90%	75,398 93.10%	80,957
2006	5,208 5.60%	88,211 94.40%	93,419
2007	6,671 8.50%	71,356 91.50%	78,027
2008	6,801 13.10%	44,923 86.90%	51,724
2009	5,344 20.20%	21,076 79.80%	26,420
2010	2,069 14.20%	12,533 85.80%	14,602
2011	1,231 11.70%	9,295 88.30%	10,526
2012	1,016 13.60%	7,472 88.03%	8,488
2013	504 6.46%	7,797 93.93%	8,301
2014*	234 3.10%	7,555 97.00%	7,789

Note: \* Based on Q1, Q2 & Q3

Source: Department of the Environment, Heritage & Local Government

### New Housing Completions by Type 2004–2014

	House	Apartment	Total
2004	60,448 79.0%	16,106 21.0%	76,554
2005	62,522 77.6%	18,035 22.4%	80,557
2006	73,073 78.6%	19,946 21.4%	93,019
2007	58,936 75.9%	18,691 24.1%	77,627
2008	38,513 75.0%	12,811 25.0%	51,324
2009	21,272 80.5%	5,148 19.5%	26,420
2010	12,514 85.7%	2,088 14.3%	14,602
2011	9,140 87.2%	1,340 12.8%	10,480
2012	7,495 88.3%	993 11.7%	8,488
2013	7,379 88.9%	922 11.1%	8,301
2014	8,766 79.6%	2,250 20.4%	11,016

Source: Department of the Environment, Heritage & Local Government



### SCSI House Rebuilding Costs per sq.m 2015

	No. of bedrooms	Typical Size	Dublin Area	Cork Area	Galway Area	Waterford Area	Limerick Area
Terraced	2	70 m2	€1,842	€1,465	€1,425	€1,395	€1,452
	3	95 m2	€1,770	€1,382	€1,348	€1,325	€1,371
Semi Detached	3	95 m2	€1,785	€1,406	€1,364	€1,339	€1,383
	4	118 m2	€1,768	€1,390	€1,349	€1,317	€1,336
Detached	4	118 m2	€1,798	€1,417	€1,357	€1,359	€1,399
Detached Bungalow	4	146 m2	€1,734	€1,392	€1,317	€1,276	€1,418

Source: Society of Chartered Surveyors Ireland

The table is a guideline based on a typical speculative built, estate type house in the Dublin, Cork, Galway, Waterford and Limerick Areas

1. The figures shown in the table are a minimum base cost guide for your house insurance.

2. The figures are based on estate type houses built since the 1960's. They exclude: (a) Properties with more than 2 storeys or with basements or habitable attics (b) One-off houses with special design features or period houses (c) Apartments / residential flats because of split responsibilities for shared areas. The insurance of apartments is covered in the block service charge. Owners should confirm with their management companies / agents that their apartment block has been valued for insurance purposes, and that the insured value is current.

3. The figures assume a basic quality specification with normal foundations, timber frames or brick / block walls, concrete tiled roof, concrete ground floor and timber first floor, softwood flush doors and hardwood double glazed windows, painted plaster to walls, plastered ceilings, standard electrics and central heating. The sum insured should be increased to allow for better than average kitchen fittings, built-in wardrobes, finishes and any other items not normally included in an estate type house (e.g. fire alarm).

4. House contents such as carpets, curtains, furniture, etc. are not covered by the figures.

5. No allowance has been made for the cost of out-buildings, patios or boundary walls. The figures do however allow for a concrete path around the house, for driveway repairs and regrassing.

6. The figures allow for demolition costs, professional fees incurred in reinstatement and VAT at 13.5% on building costs and 23% on professional fees.

7. The amounts included for professional fees have been calculated to cover the following services: Building Surveyor / Architect, Engineer and Quantity Surveyor.

8. The costs are based on building rates in March 2015.

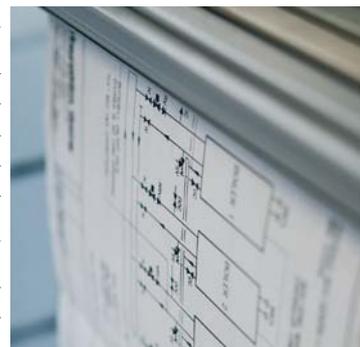
## Planning Charges 2015

Class of Development	Charge
Most Building Types	€80 or €3.60 per sq.m whichever is greater
New Houses	€65 for each dwelling
House Alterations	€34
Golf Courses	€50 per hectare
Outline Planning Permission	75% of full planning permission charge

### Maximum Scale of Charges for Planning Applications

Full Application Most Building Types	€38,000
Outline Application Most Building Types	€28,500
Retention Application	€125,000

Source: Local Planning Authorities



## Fire Certificate Charges 2015

option 1

### Type of Application

Making Application as per status quo

### Charge

€2.90 per sq.m  
up to a maximum of €12,500

option 2

### Type of Application

A seven day notice

### Charge

€5.80 per sq.m  
up to a maximum of €25,000

option 3

### Type of Application

A revised Fire Safety Certificate Application

### Charge

€2.90 per sq.m  
up to a maximum of €12,500

option 4

### Type of Application

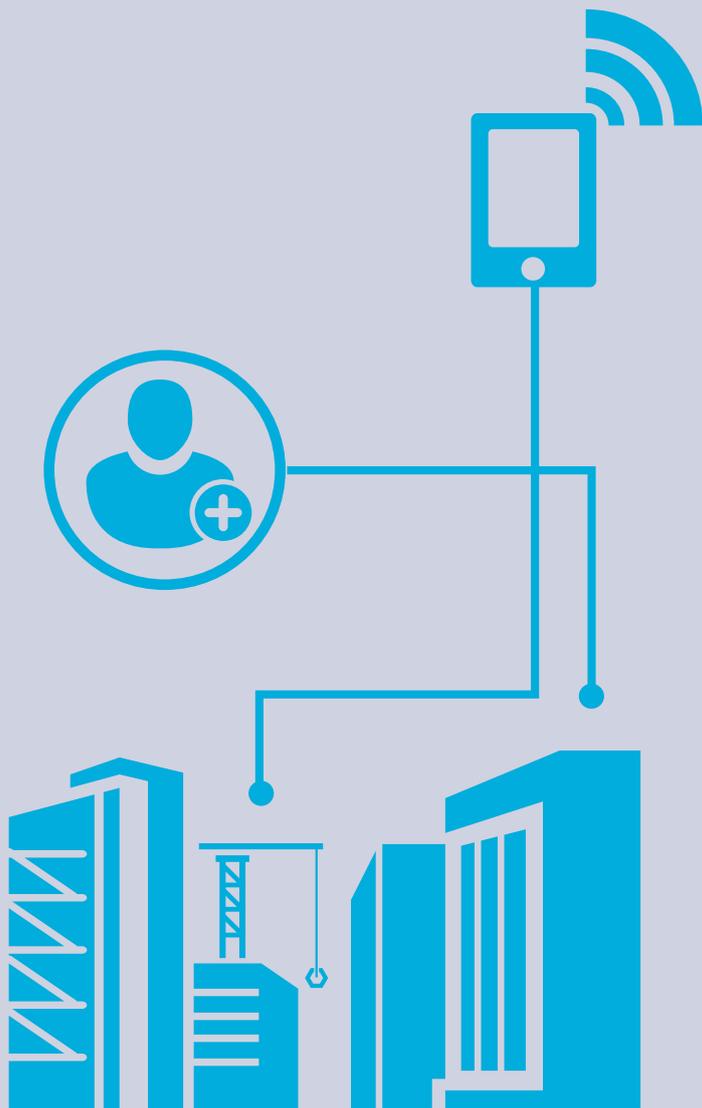
A Regularisation Fire Safety Certificate Application

### Charge

€11.60 per sq.m  
up to a maximum of €50,000

Source: Local Planning Authorities





# Topical Issues

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# Grand Canal Dock and North Lotts Strategic Development Zone (SDZ) – An Overview

by Stephen Ashe

On the 18th December 2012, the Irish Government designated Grand Canal Dock and the North Lotts areas of Dublin City a Strategic Development Zone (SDZ). The total area covers 66 hectares, 22 hectares of which have development potential making this site a significant economic and social importance to the state.

## What is an SDZ?

In essence, the principal of an SDZ is to make it easier and quicker to obtain planning permission for development. This must be consistent with the planning scheme in force for an SDZ and prohibits planning permission for development which is not consistent with such a scheme. Special rules apply to planning and development which must be strictly adhered to. There is no right of appeal (either for the applicant or any third party) to An Bord Pleanála against a decision of a planning authority on an application for planning permission in an SDZ. The Planning Acts also give the planning authority the power, if necessary, for the compulsory acquisition of land in an SDZ.

*The ultimate goal of the SDZ is to fast-track the planning process and to provide much needed office space and residential homes to the market.*

## Status of Legislation

An Bord Pleanála approved the North Lotts and Grand Canal Dock SDZ Planning Scheme on 16th May 2014, subject to a number of minor modifications. The SDZ Planning Scheme, by virtue of Section 169 of the Planning and Development Acts 2000-2013, now forms part of the City Development Plan and any contrary provisions in the Development Plan are superseded.

## What are the rules?

The planning scheme can be accessed on [www.dublincity.ie](http://www.dublincity.ie). The rules prescribe preferred heights and densities as well as the interplay between commercial and residential uses. The SDZ also sets out in detail particulars with regard to carparking, open spaces and infrastructural requirements. Proposals to minimise adverse effects on the environment and proposals relating to the provision of amenities are also addressed. Some flexibility is allowed in terms of height, design and public space layout. It also allows for partnership across sites to be

progressed which might, for example, produce a better use of land or design layout.

## Where does the SDZ apply?

The Docklands SDZ is effectively a masterplan covering development. It comprises 20 city blocks spread across two main development areas – the North Lotts (13ha) on the northside of the River Liffey, with the remaining 9ha at Grand Canal Dock on the southside. The areas are divided into five hubs – Spencer Dock, Point Village, Grand Canal Dock, Britain Quay and Boland's Mill. Half of all development is earmarked for new homes, with some 2,600 units planned. In apartment developments of 15 units or more, a minimum of 15% must be for family-sized three-bedroom homes of at least 100 square metres. This is designed to encourage families to live in the city, and prevent further urban sprawl. Associated services including shops, cafes and health centres will be provided. In addition, there will also be as much as 366,000 square metres of office floor space. Most buildings will be eight storeys high, but there is scope in certain areas for taller properties in the range of 10-12 storeys.



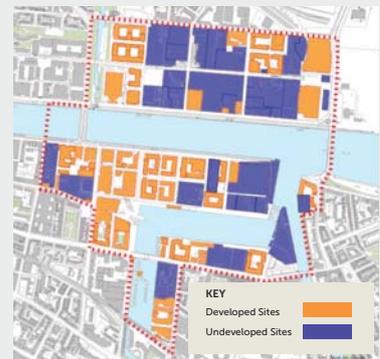
## Who are the key landowners?

The National Asset Management Agency (NAMA) plans to invest €2bn in new properties over the coming years, and is a key landowner. Oaktree Capital Management and US private equity firm Kennedy-Wilson are also major landowners.

The ultimate goal of the SDZ is to fast-track the planning process and to provide much needed office space and residential homes to the market. This should also help deliver further foreign direct investment and ultimately create jobs both at development and occupation stages.



Map showing SDZ and Wider Docklands Area as Designated by the DDDA Act 1997



Developed and Undeveloped Sites



# New ways of project delivery – Lean Construction and Integrated Project Delivery. A better way to work?

by Paul Boylan

How often have we heard?

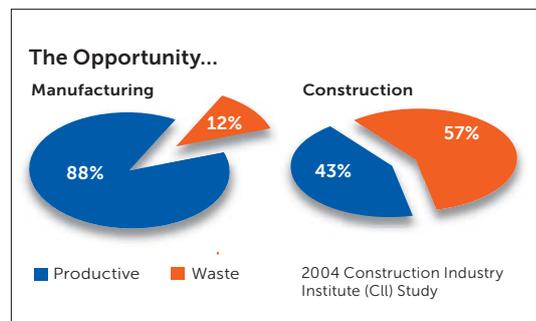
- Projects take too long
- Projects cost too much
- Team wasn't cohesive
- Performance disappointments
- Why can't we get it right first time
- What lessons from other industries have we learned
- How can we eliminate waste and get it right first time

As an industry we have continued to do the same things time and time again in how we approach major construction projects.

The opportunities are out there to learn and improve our industry.

Major clients are working with our sector to take the lessons learned from other industries across to construction projects.

Recent examples of how our industry is changing and how we are looking differently at the delivery of major capital projects is through the application of Lean Design and Construction as well as Integrated Project Delivery (IPD).



So what are they?

## 1. Lean Design and Construction

Lean is a production based approach to project delivery and a new way to design and build capital facilities.

Lean focuses on delivering precisely what the client and end-user want.

Its application requires a fresh approach in thinking about the complete process from design through to construction in order to remove waste, to create continuous flow and to radically enhance value to the customer.

The main principles of Lean are:

- Specify value from the end customer's perspective
- Clearly identify the process that delivers customer values and eliminate all non-value adding steps
- Make the remaining value adding steps flow without interruption
- Let the customer pull - don't make anything until it is needed, then make it quickly
- Pursue perfection by continuous improvement

These principles are now being applied to construction in terms that are easily understood.

Impressive benefits being demonstrated by the early practitioners have led to an increasing demand for information on what is involved and how to proceed.

Lean is not about:

- Cost cutting
- Slashing prices
- Reduction in staff numbers
- Squeezing the supply chain

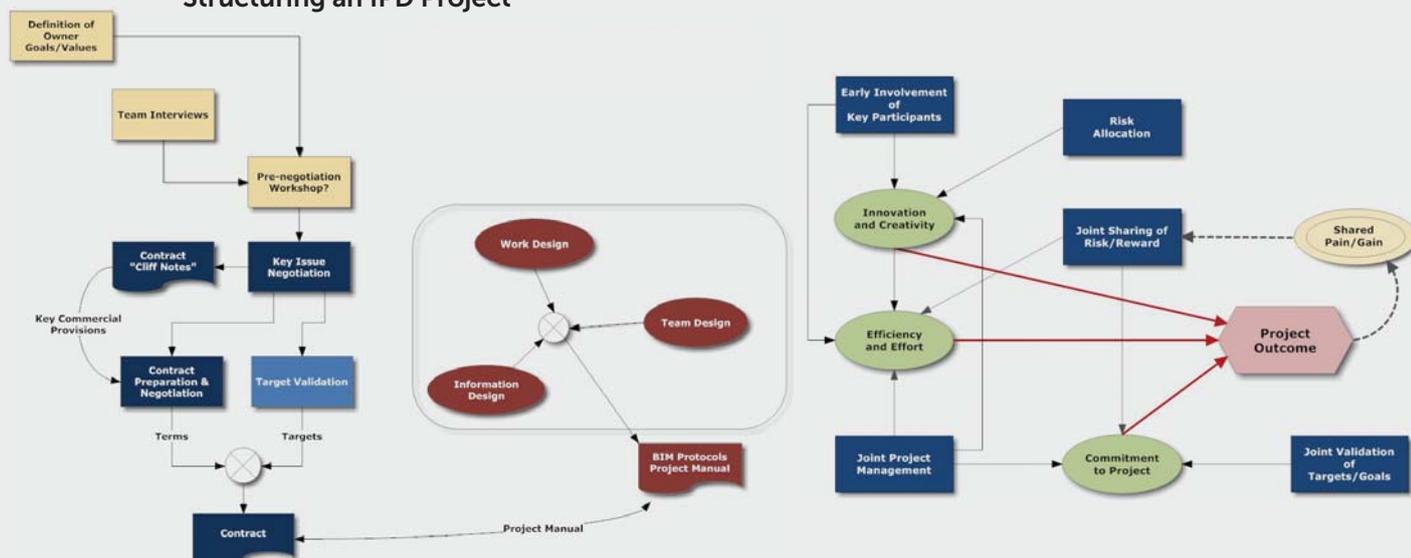
Lean results:

- The facility and its delivery process are designed together to better reveal and support customer purposes.
- Work is structured throughout the process to maximise value and to reduce waste at the project delivery level.
- Efforts to manage and improve performance are aimed at improving total project performance, because this is more important than reducing the cost or increasing the speed of any particular activity.
- Control is redefined from monitoring results to making things happen.
- The performance of the planning and control systems are measured and improved

## Practical example of lean in the field

The design team, main contractor and the sub-contractors are using BIM to identify and resolve clashes and other issues prior to construction. The sub-contractors are producing shop drawings by leveraging the 3D data to prefabricate system assemblies off-site. Off-site fabrication reduces material waste and transportation costs. Because they are able to fabricate off-site, sub-contractors can deliver material and systems on a just-in-time, as-needed basis which allows for a more controlled and predictable installation process on-site.

## Structuring an IPD Project



## 2. Integrated Project Delivery – IPD

Integrated Project Delivery (IPD) is a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to reduce waste and optimise efficiency through all phases of design, fabrication and construction.

IPD can be applied to a variety of contractual arrangements and will usually include team members outside the traditional team of owner, architect and main contractor.

### Overview

IPD starts day 1 of the project and continues throughout the full life cycle of the project delivery.

IPD encourages early contribution of knowledge and experience and requires proactive involvement of key participants from the owner down to the sub-contractors.

IPD is built on collaboration. As a result, it can only be successful if the participants share and apply common values and goals.

### How to deliver an IPD Project

The key to successful Integrated Project Delivery is assembling a team that is committed to collaborative processes and is capable of working together effectively.

### IPD approach

For IPD to succeed, the key participants must be able to freely exchange information and comment on each other's work in a collaborative manner.

Leadership must allow ideas to be freely voiced, however decisions need to be made and then actioned in the best interests of the project.

Leadership can consist of one person or party or may be a collection of people. Leaders can be assigned at different stages to make decisions.

Architects and Engineers will tend to lead during the front end of the project with a transition to the main and sub-contractors as construction commences.

In addition, leadership may be distributed based on systems, such as mechanical or structural systems, with systems leaders reporting to the overall team leader.

The owner's role in IPD differs significantly from the owner's role in other project delivery methods. The owner in an IPD project must be actively involved during every stage of the process, not just as a reviewer or approver, but as a contributing member of the design and construction team. It thus follows that the owner has a special leadership role, as well.

The owner must continuously communicate its needs and vision while recognising the legitimate interests of the other parties. By working with and for the other parties, the owner can expect them to work for the project, and to achieve the owner's vision.

### Conclusion

Our industry is constantly going through change and as chartered surveyors we need to lead change as our clients no longer accept the same results time and time again.

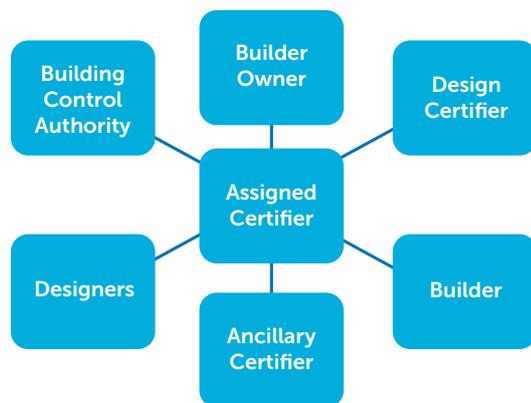
There must be process improvements that lead to more cost and time effective solutions without impacting on safety or quality in design and construction.

Lean and IPD are two examples of how efficiencies and best practice from other industry can be transferred to the construction sector. A number of major Irish construction projects have used Lean and IPD successfully in the last three years with many more planned for the years ahead.

# Building Control (Amendment) Regulations – A Guide

by Tony Madden

The Building Control (Amendment) Regulations 2014, known as B.C.A.R., came into effect on the 1st of March 2014 and have brought significant change to the building control regime in Ireland. The aim of B.C.A.R. is to create a culture of compliance and promote interaction between the building owner, the builder and the design professionals. The intention is that the regulations will play an important role in the pursuit of an improved culture of building control with an increased focus on care and safety in the construction industry.



## Obligations of the Building Owner

The Building Owner is ultimately responsible for ensuring compliance with the building regulations. They must ensure that a Fire Safety Certificate and a Disability Access Certificate are obtained where required, sign a Commencement Notice and the notice for the assignment of an Assigned Certifier and a competent builder. They must also make key health and safety appointments (PSDP & PSCS), maintain records, give notice of a change of building owner if required and ensure that adequate resources and competent persons are made available to design, construct, inspect and certify the building works.

## Designer's Role

While the Designer always has an obligation to design their respective elements of work in accordance with the building regulations they now have additional responsibilities with regard to their interaction with the Assigned Certifier. They must provide plans, specifications and documentation for lodgment at commencement stage and provide sufficient information to the Assigned Certifier to enable them to fulfill their role. They must notify the Assigned Certifier of their proposed inspection regime for inclusion in the overall inspection plan, carry out inspections that are pertinent to their element of the design, provide ancillary certificates where required and liaise with the Assigned Certifier at all stages of the process.

## Assigned Certifier's Role

Under the regulations a new role of Assigned Certifier has been created to inspect and co-ordinate the inspection activities of others during construction and to certify on completion. They must identify all design professionals and specialists for whom certificates are required, co-ordinate the ancillary certification by members of the Design Team and other bodies for the certificate of compliance on completion and carry out inspections, or oversee the inspections of others, in accordance with the inspection plan. The role of the Assigned Certifier is a separate stand-alone appointment from that of a designer.

## Main Contractor's Obligations

The main contractor must be CIRI registered, must accept the Building Owner's assignment to build and supervise the works and sign the statutory forms identified in the Commencement Notice. They must co-operate at all times with the Contract Administrator, Design Team, the Assigned Certifier and other Ancillary Certifiers and ensure that the workmanship and materials comply with the building regulations.

## The Role of the Building Control Authority (BCA)

The BCA processes applications for Fire Certs and Disability Access and advises the Assigned Certifier in relation to compliance as well as validating and registering the Certificate of Compliance. The onus on compliance has been passed on to the Building Owner and their Design Team and Assigned Certifier. The BCA may serve an enforcement notice for non-compliance or institute legal proceedings for breaches of regulatory requirements. It typically has 21 days to query or reject documentation. As the Completion Certificate must be on the register before the building is opened or occupied, it is critical that all submissions are in place at least three weeks prior to anticipated Practical Completion.

## Building Commencement Notice

The 2014 regulations introduced the electronic administration of building control matters through the Building Control Management System (B.C.M.S.) as the preferred means of building control administration. To apply for a Commencement Notice each party to the notice (the building owner, the designer, the builder and the Assigned Certifier) must first register through this system.

With a standard notice, both the Fire Certificate and the Disability Access Certificate must be obtained before the submission of the Commencement Notice. There is a second option of a '7 day Notice' which allows the project to commence without the

Fire Certificate and the Disability Access Certificate, but they must be obtained during the project and must be submitted with the Certificate of Compliance on Completion.

### Certification Process

The certification process is an online certification system which the Assigned Certifier will manage. The Assigned Certifier will co-ordinate the inspection plan and the inspection notification framework throughout the process. During the construction process the Assigned Certifier will monitor the works and both the Builder and the Assigned Certifier will sign and issue a Certificate of Compliance on completion.

There is effectively a six step process from appraisal to commencement notice, through the construction period and on to the issue of the Certificate of Compliance. This process is outlined in the diagram below.

The key documents in the certification process are the Inspection Plan and the Inspection Notification Framework (INF). The Inspection Plan is a key management tool in coordinating the inputs of those involved in the process. It is examined by the Building Control Authority to establish whether an appropriate level of oversight is being adopted on the project and is used by the Assigned Certifier as the basis of their certification of the building or works.

### Statutory B.C.A.R. Assignment and Certificate Forms

In advance of the Commencement Notice of the works there are two statutory assignments and three statutory certificates to be completed online using the BCMS on-line system. The two assignments are:

1. Notice of Assignment of the Assigned Certifier
2. Notice of the Assignment of the Builder

The three statutory certificates are:

1. Design Certificate ( Form of Certificate of Compliance Design)
2. Undertaking by the Assigned Certifier ( Form of Certificate of Compliance)
3. Undertaking by the Builder ( Form of Certificate of Compliance)

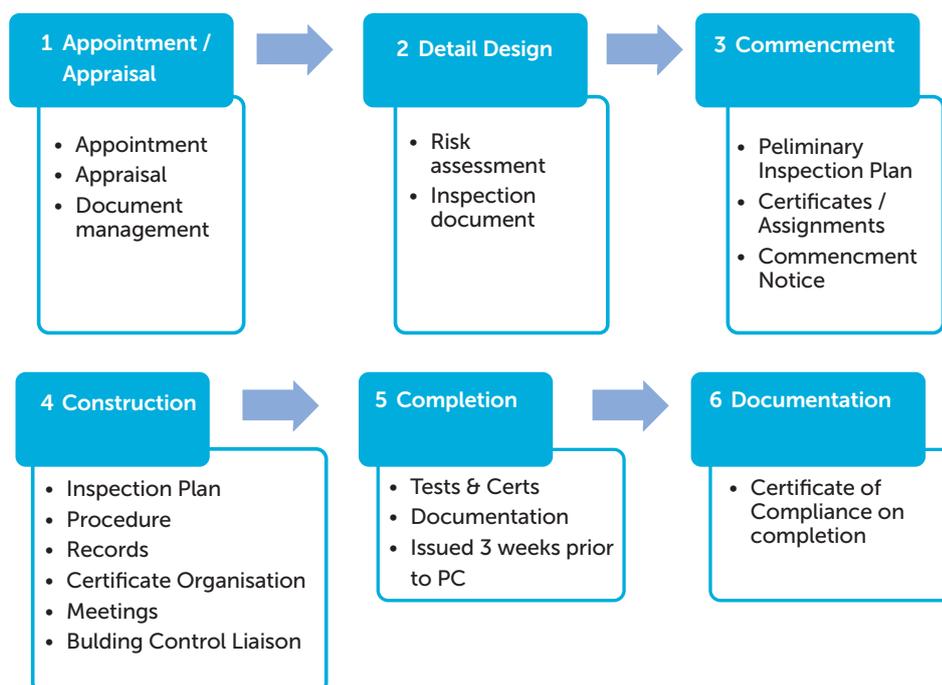
In addition, there is the following fourth statutory certificate which is co-signed by the Assigned Certifier and Builder and submitted at project completion:

4. Certificate of Compliance on Completion

### Cost and Programme Implications

Additional resources will be required by Design Team members in inspection and sign-off of their sections, both at the design and construction stage and in implementing the detailed inspection regime that will need to be resourced. It is likely that the PI premium of Design Team members will increase in order to cover the increased risk in complying with the new

## Six step certification process



*The intention of the new regulations is to increase the focus on inspection and to develop a culture of compliance within the industry.*

requirements. Taking account of the new role and separate appointment of an Assigned Certifier and the additional workload of other Design Team members in acting as Ancillary Certifiers, it would be prudent to allow a premium of 0.75% – 1%, depending on the size of the project to cover additional Design Team fees in complying with B.C.A.R..

The Builder will be required to resource his element in relation to supervision, provision of tests, certification and co-operation with the inspection notification framework and the provision of ancillary certification acceptable to the Assigned Certifier. While the QA procedures currently in place with most of the large contractors effectively pick up the current B.C.A.R. requirements and may not have a significant impact in the pricing of their preliminaries, it is likely that B.C.A.R requirements may significantly impact on pricing of preliminaries by some of the smaller contractors. This is the case particularly on projects of a smaller scale where the extent of inspections and sign off required may impact on the pricing of the project.

While B.C.A.R. is still relatively new and has not yet been fully implemented on a major project, the indications are that the three week period at the end of the project in order to obtain the Certificate of Compliance could add to the overall programme and consequently impact on the main contractor's preliminaries. In terms of programming implications there are more onerous requirements in relation to the submission of a Commencement Notice. Similarly, submissions at the completion certificate stage will need to be factored in and an allowance made for a suitable period for Building Control Authority validation.

#### **Conclusion**

The intention of the new regulations is to increase the focus on inspection and to develop a culture of compliance within the industry. The increased responsibility and change in risk-profile for owners, builders and design professionals under the regulations is likely to increase the cost of completing projects in both the public and private sectors in terms of insurance cover, additional design team fees in complying with the legislation, on-site programme implications and administration costs. Provisions will need to be built into contracts to ensure builders comply with the requirements under the regulations, including co-operation with the Assigned Certifier and provision of acceptable ancillary certificates.

The certification process imposes challenging responsibilities on and additional liabilities for all parties involved in the process. It will take time to settle and may involve modifications to the regulations over the coming years.

## What is practical completion? (UK and Irish contracts)

by Enda McMorrow

A certificate of practical completion marks the point at which the Contractor has completed his contractual obligations and can hand over the works to the client. Practical completion gives rise to a number of events and parties to the contract should be aware of these. For most building contracts they can be broadly summarised as follows:

- Possession of the site transfers to the employer as does the risk of damage to the works and third party liability.
- Liquidated damages for delay claims will crystallise.
- Defects liability period commences.
- Payment of one half of the retention fund falls due to the contractor.
- No further instructions may be issued for variation works or rectification of works besides those appearing during the defects liability period.
- The sub-contractors protection under the main contract all risks policy may be brought to an end.

Given the substantial significance of practical completion for all concerned it is not surprising that architects and contractors often argue as to whether or not practical completion has been achieved. Where a dispute occurs the first point of reference is usually the contract.

### Royal Institute of Architects of Ireland (RIAI Contract 2011)

From an Irish context, practical completion is expressly defined in the RIAI Contract under clause 31 which states *'Practical Completion means that the Works have been carried to such a stage that they can be taken over and used by the Employer for their intended purpose and that any items of work or supply then outstanding or any defects then patent are of a trivial nature only and are such that their completion or rectification does not interfere with or interrupt such use.'* This is a very useful clause as it clearly outlines what is required for the works to be deemed practically complete.

### Government Construction Contracts Committee (GCCC Form of Contract)

Given the importance of the term it is somewhat disappointing that there has been no real attempt in the new public works contract to define exactly what it means.

The GCCC contract makes reference to the employer's representative being obliged to issue a certificate of substantial completion when the works have reached completion however, no clear contractual definition of practical completion is noted. Clauses 9.6.1 and 9.6.2 deal with the issue as follows:

**9.6.1** *The Contractor shall achieve Substantial Completion of the Works and each section by its date for substantial completion*

**9.6.2** *Within 20 working days after receiving the Contractor's request to certify substantial completion of the works or a section, the employer's representative shall give to the contractor and employer*

**(1)** *A certificate stating the date that substantial completion has occurred or*

**(2)** *The reasons for not issuing the certificate*

In the event of a dispute, there is nothing in the contract to assist the authorised certifier in assessing whether practical completion has been achieved. Reference may have to be made to decisions of the courts which are discussed below to assist in this regard.

### The New Engineering Contract (NEC 3)

In the UK the Engineering and Construction Contract (NEC3) provides a definition of completion as occurring when

a. The contractor has done all the works which the Works information states he is to do by the completion date

and

b. The contractor has corrected notified defects which would have prevented the employer from using the works and others from doing their work

### The Joint Contracts Tribunal (JCT) Contract

There is no definition for practical completion in the JCT suite of contracts. Instead, it is left to the discretion of the architect, contract administrator or employer to determine whether they think practical completion has been achieved. This can lead to differences of opinion where the contractor might be of the view that the works are complete and the person certifying practical completion disagrees. This has been the subject of numerous referrals to the courts and the findings of these cases are worth noting.

In *J Jarvis and Sons v Westminster Corporation (1978) 7 BLR 64 HL*, Lord Justice Salmon held that practical completion did not mean completion down to the last detail, however trivial or unimportant. The courts made a further attempt at a definition in *H.W. Neville (Sunblest) Ltd v William Press and Son Ltd (1981) 20 BLR 78* where it was held that a certificate of practical completion can be issued "where very minor de minimus work had not been carried out" but

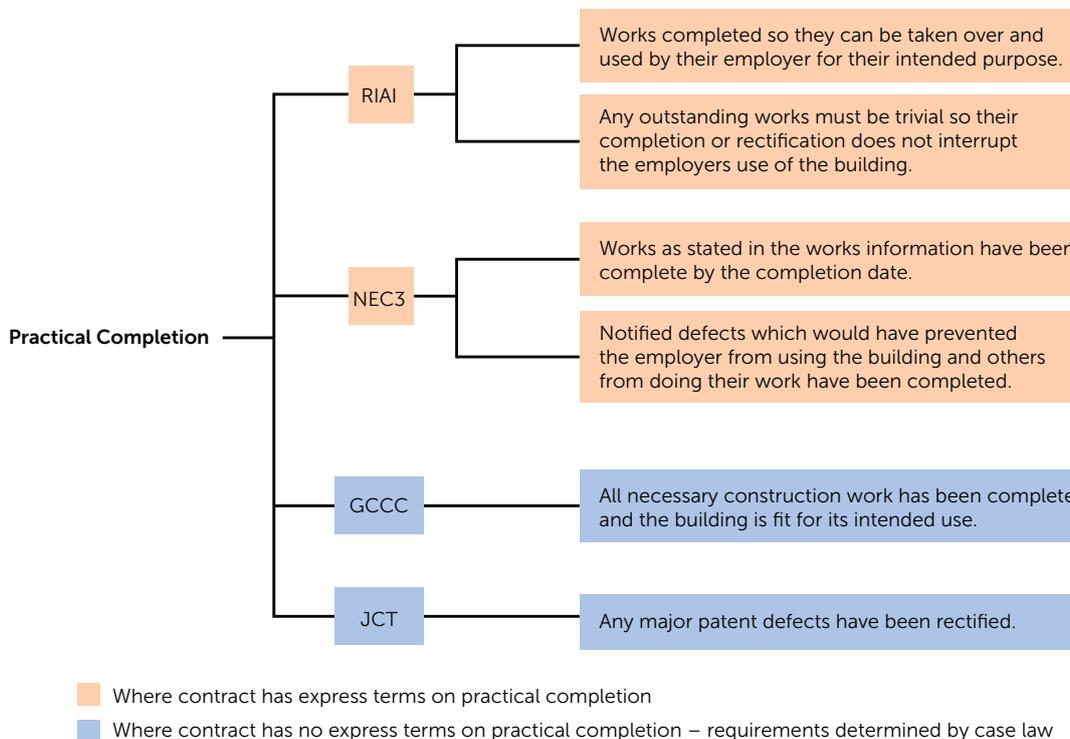
that ‘where there are any patent defects the architect could not have given a certificate of practical completion’. Judge Newey in **Emson Eastern Ltd v EME Developments Ltd (1991) 55 BLR114** in arriving at his decision advised that a construction project is not like the manufacturing of goods in a factory. The size of the project, use of many materials and co-ordination of different types of skilled/unskilled operatives makes it virtually impossible to achieve the same degree of perfection as a manufacturer would. His view was that it must be rare for a new building to have every screw and every brush of paint correct. In **Mariner International Hotels v Atlas** it was found ‘practical completion is a state of affairs in which the works have been completed free from patent defects, other than ones which can be ignored as of very little importance and value.’

The most recent case which came before the Technology and Construction Court last year **Laing O’Rourke v Healthcare Support (Newcastle) Ltd & Ors [2014] EWHC 2595** took the opportunity to reiterate earlier advice on the phrase. It was found that the works can be practically complete even though there may be hidden defects. Only an express provision would displace this general approach.

No clear answer has emerged from the courts as to the meaning of the term. To paraphrase the legal authorities it has been accepted that practical completion has been achieved when all necessary construction works have been completed free from patent defects. Unless the patent defects are minor then practical completion cannot be achieved. The key question is likely to be whether a defect is minor or something more substantial. This will depend on each case, however, a useful test is to ask whether the building, with the defect, is fit for the use and occupation for which it had been intended. If it is then the works can be said to be practically complete.

In light of the above, it is suggested that parties to a building contract establish at a very early stage in the process exactly what they are trying to achieve by practical completion. Providing clarity at the outset will avoid any subsequent disagreement about what precisely is required in order for the contractor to have achieved this essential stage in the construction process.

The table below shows the requirements under each contract for works to be deemed practically complete.



## About Bruce Shaw

### Who we are

Bruce Shaw is an international construction consultancy firm with over 40 years' experience, providing project and cost management and general consultancy services to the global construction industry.

With approximately 450 staff in 22 office locations throughout Ireland, the UK, Europe, the GCC, the USA, Asia and Australia, we currently work for clients in over 40 countries around the world.

We select the highest calibre staff for our projects and our teams of professionals are amongst the highest regarded in the industry. We continue to promote and invest in our 'Graduate Training Scheme' which provides practical experience for those wishing to prepare for their final examinations, such as the Assessment of Professional Competence, achieving chartered status to the Royal Institute of Chartered Surveyors (RICS), Society of Chartered Surveyors Ireland (SCSI), Chartered Institute of Purchasing & Supply (CIPS) or M.Sc in Strategic Procurement.

### What we do

Our specialist project teams bring a fresh approach to projects enabling us to adapt and be responsive to the evolving needs of our clients and the ever changing environment in which we work.

We embrace new technologies, such as BIM and LEAN construction, and tailor them to the specific needs of our clients, leading to a faster project delivery, greater cost efficiency and maximum value for money. Our consistent delivery of service combined with our quality client care is reflected in the repeat commissions we are awarded.

Services provided include:

- Cost Management/Quantity Surveying
- Project Management
- Contract and Procurement Strategies
- Change Management
- Project Audits
- Benchmarking – "Real World Pricing"
- Arbitration and Costs Settlement
- Health and Safety Management
- Bank Appraisals, Bank Monitoring
- Capital Allowances/Tax Advice
- Value Engineering and Management

Our services are internationally accredited to the ISO9001 quality standards and 14001 environmental standards.

Our 40 years' experience spans a wide variety of sectors including:

- Life Sciences
- Data Centres
- Commercial
- Education
- Healthcare
- Hotels/Hospitality
- Industrial
- Local/Central Government
- Oil & Gas
- Aviation
- PPP/PFI
- Residential
- Retail
- Sports & Leisure
- Transportation/Civil Engineering
- Urban Regeneration/Mixed Use



## Bruce Shaw Offices Worldwide

- **22 Global Office Locations** throughout Europe, the GCC, USA & Asia Pacific.
- **Project Locations** 150 cities in over 40 countries.



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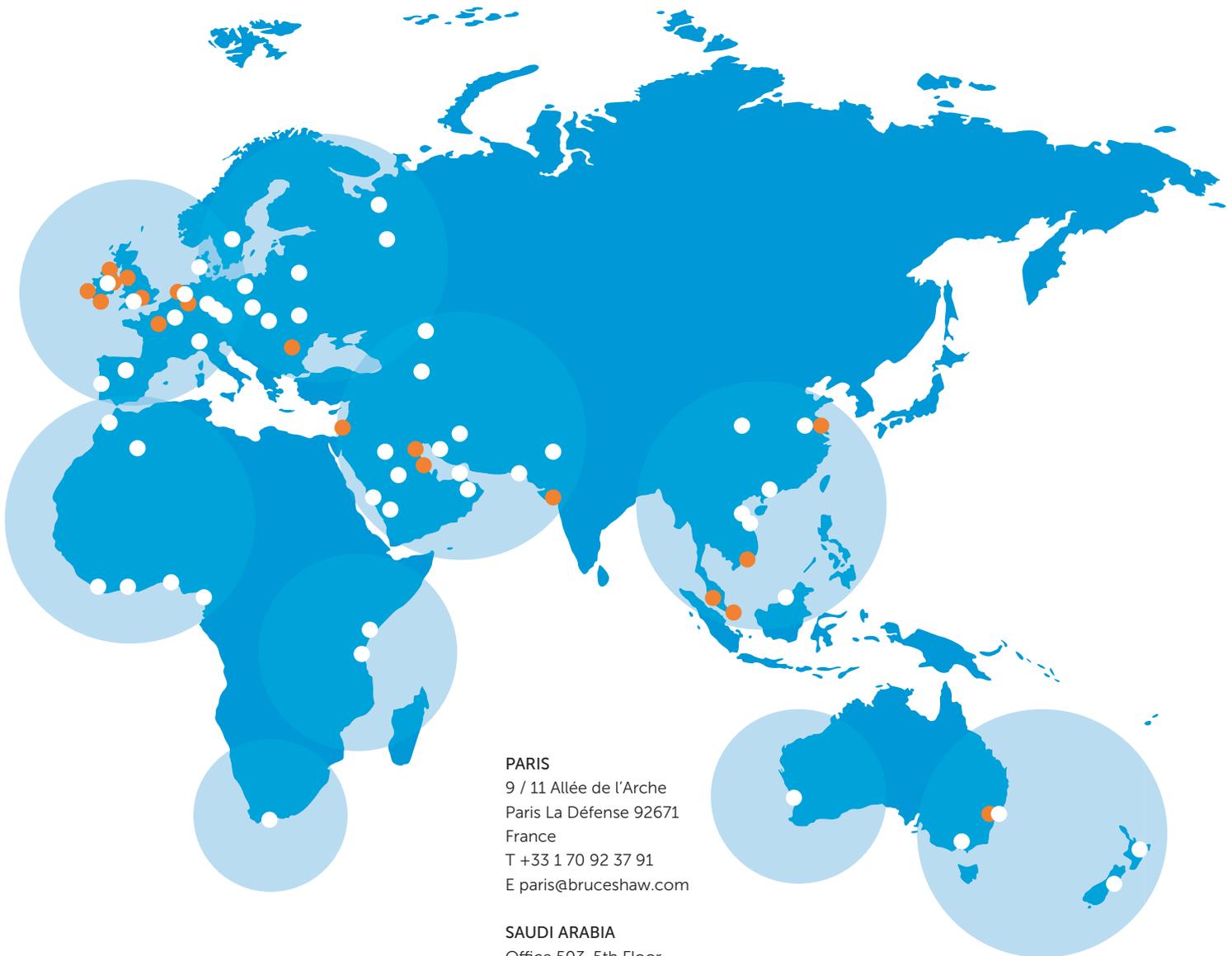
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