RLB Rider Levett Bucknall

RIDERS DIGEST 2019

UNITED KINGDOM EDITION

MIDLANDS LOGISTICS PARK
CORBY, UK

Delivering a new industrial and logistics park and redevelopment of a 250 acre brownfield site previously used for iron ore extraction in connection with Corby's historic steelwork production

RLB Rider Levett Bucknall

RIDERS DIGEST

2019 EDITION

Riders Digest is a compendium of cost data and related information on the construction industry.

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Cost information in this publication is indicative and for general guidance only. All prices and rates are as at 1st Quarter 2019 and expressed in British Pounds unless otherwise stated. References to legislative provisions and regulations are as at 1st Quarter 2019. Changes after this period will not be reflected.

Please note that all figures exclude prevailing Value Added Tax (VAT).

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FOREWORD

Welcome to the 2019 edition of the Riders Digest; the essential guide to the UK Construction Industry.

The construction industry is changing. Change presents challenge and opportunity, and at RLB we are an advocate of change so that we can deliver a more sustainable future.

Making a positive and sustainable impact underpins what we do. As a responsible business, we are committed to making a lasting difference, and to meeting the needs of our industry now and in the future, including those who work within it and those who benefit from the outcomes created by it. Our outreach and engagement programmes are designed to open up opportunities and access to careers in construction, helping to create a more inclusive and diverse industry and they are one example of our Social Value contribution.

For us, Social Value is defined by understanding the social, economic and environmental impact we make on people and communities. As well as measuring our own Social Value contribution, we have developed a model that enables our customers to establish their Social Value requirements and attach a monetary value to them. Our approach is to ensure that Social Value principles are integrated in every project, so that every project can leave a positive legacy.

Our former chairman, David Bucknall, is a great example of someone whose legacy continues to inspire and influence. In 2019 he was announced posthumously as the winner of the Urbanist Category in the RICS 150th Anniversary Pride in the Profession vote; recognised as an advocate for the betterment of society. David's legacy lives on in RLB, and we continue to work by his principles today. We place great trust in our people and empower everyone to make a difference, to shape the places where we live, learn, work, and play, and to apply our skills to champion good in the industry.

Our dedication to our people is recognised by being named a Top Employer UK 2019 by the Top Employers Institute once again, an award which marks excellence in employee conditions and a focus on encouraging and developing our people. With the best people we can deliver the best outcomes and being acknowledged as the number one global cost consultant partner in the World Architecture 100 Survey 2019, for the fourth consecutive year, reaffirms our focus on delivering success for those we work with.

As the industry adapts and moves on at pace, so does technology. We continue to invest in technology – launching our new global app, RLB Intelligence, to provide access to the latest global cost data and insights. Our Global Digital Committee ensures that RLB remains at the forefront of technological change; supporting advances in BIM and applying these learnings across the business to drive efficiencies and to deliver benefits for our customers.

We're proud to work with colleagues and collaborators across the industry to facilitate industry-wide change initiatives and were delighted to be part of the team involved in the Pre-qualification Reform Project. Through the creation of a Common Assessment Standard, led by Build UK in partnership with the Civil Engineering Contractors Association (CECA), this initiative aims to improve efficiency and reduce cost across the construction industry.

We believe it is only by working collaboratively, cohesively and flexibly that we can promote and effect positive change in the industry.

We hope you enjoy this edition of the Digest, and please get in touch with any feedback.

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MARKET OUTLOOK - FACING NEW CHALLENGES

The unveiling of the Government's Construction Sector Deal, in July of 2018, affirmed the construction industry as a major component of the UK's economy.

The Deal establishes a partnership between Government and the industry, to address long-term productivity issues affecting construction and to prepare the industry for the next decade. The intent is to cement the UK as the world's most innovative economy, to generate jobs and earning power, to upgrade UK infrastructure and to increase national prosperity. Alongside the Deal is a renewed Government emphasis on cleaner growth, seeking to halve buildings' energy use by the end of the 2020s.

To achieve these objectives the Deal addresses buildings' performance and energy use, apprenticeships and construction industry skills, value for money and the global-competitiveness of the sector.

The Deal funds the Construction Innovation Hub, providing a national focus for the development of digital techniques, artificial intelligence and offsite manufacture, to improve efficiencies, reduce waste and facilitate clean growth. This targeted innovation will enable the UK to thrive, despite the challenges of an ageing society and wider demographic changes over the coming decade.

The construction industry employs almost 10% of the UK workforce - over 3 million people. With only 10% of that 3 million aged under 25, and the ongoing political uncertainties around migrant labour far from resolved, the importance of innovation, education and training cannot be overstated.

Over the next year the full implications of the Hackitt Review will be felt. This will see an overhaul of building regulations, new standards in practitioner competence and much greater levels of responsibility being placed on building owners and managers.

The industry is experiencing an ever-increasing pace of change on two fronts – innovation and regulation - which will bring a complex and inter-related mix of obligations, responsibilities, risks and opportunities for everyone involved. Rider Levett Bucknall is at the forefront of these changes, leading the development of professional services and procurement and re-thinking how the industry will adapt and thrive in new markets with different trading partners.

Many would say that this shake-up is long overdue and we look forward to supporting clients through this period of change in the way that projects are procured, managed and built.

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SCHOOL OF ARCHITECTURE AND THE BUILT ENVIRONMENT, UNIVERSITY OF WOLVERHAMPTON
WOLVERHAMPTON, UK

A 7,800m^2 building designed to retain the industrial heritage of the site and inspire a creative approach to learning

Photo Credit: Associated Architects

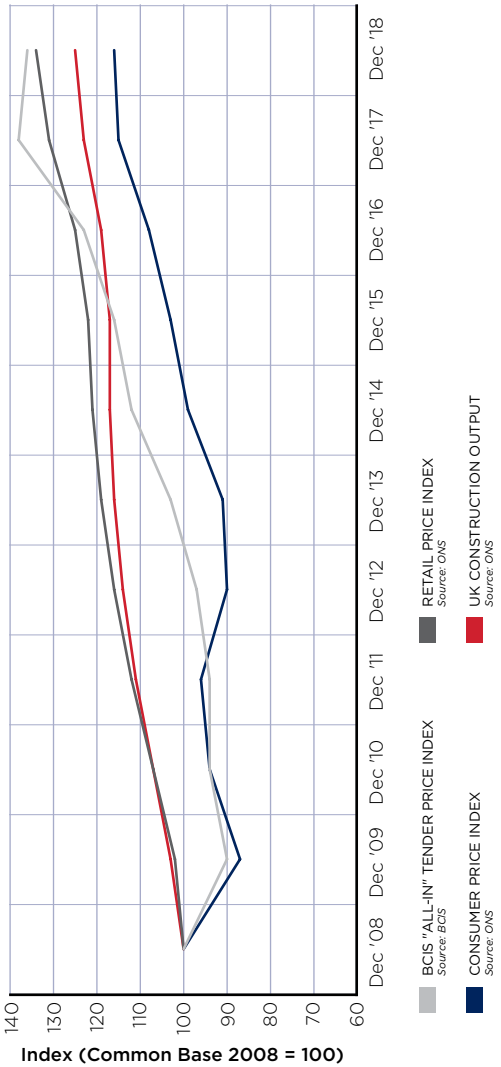
UK CONSTRUCTION TRENDS

2 Indices and UK Construction Output Comparison

4 UK Construction Output by Sector

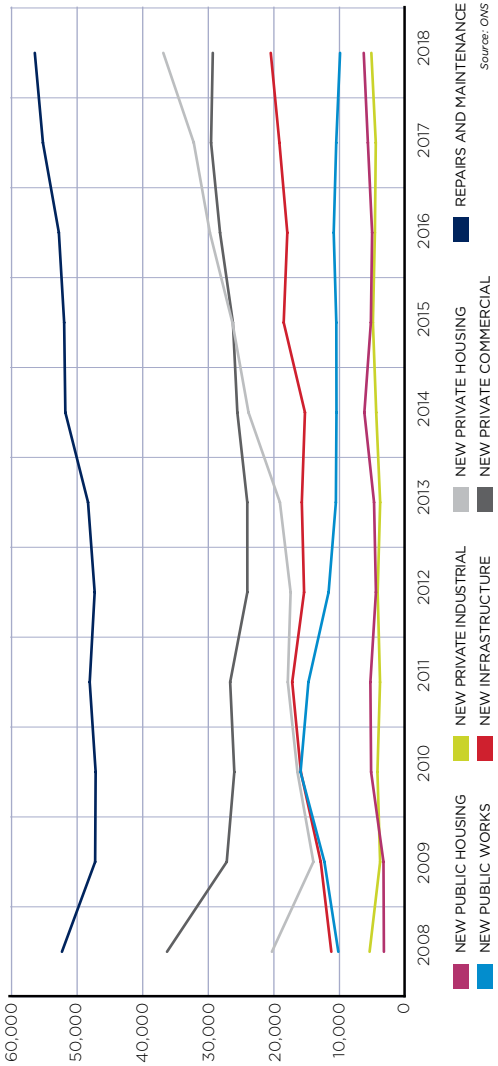
6 UK Construction Materials Monthly Average Price Index

INDICES AND UK CONSTRUCTION OUTPUT COMPARISON



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
BCIS "All-in" Tender Price Index	100	90	94	94	97	103	112	116	123	138	136
Retail Price Index (RPI)	100	102	107	112	116	119	121	122	125	131	134
Consumer Price Index (CPI)	100	103	107	111	114	116	117	117	119	123	125
UK Chain Volume Construction Output	100	87	94	96	90	91	99	103	108	115	116
Note: UK Chain Volume Construction Output is shown as a 12-month moving average index and depicts changing work volume, net of price change											
BCIS "All-in" Tender Price Index % Change	Base	-9.9%	+4.1%	+0.3%	+3.2%	+6.3%	+8.7%	+3.7%	+5.7%	+12.2%	-1.2%
Retail Price Index (RPI) % Change	Base	+2.4%	+4.8%	+4.8%	+3.1%	+2.7%	+1.6%	+1.2%	+2.5%	+4.1%	+2.7%
Consumer Price Index (CPI) % Change	Base	+2.9%	+3.6%	+4.3%	+2.6%	+2.0%	+0.5%	+0.2%	+1.6%	+2.9%	+2.1%
UK Chain Volume Construction Output % Change	Base	-13.2%	+8.5%	+2.2%	-6.9%	+1.5%	+8.8%	+4.4%	+4.1%	+7.1%	+0.7%

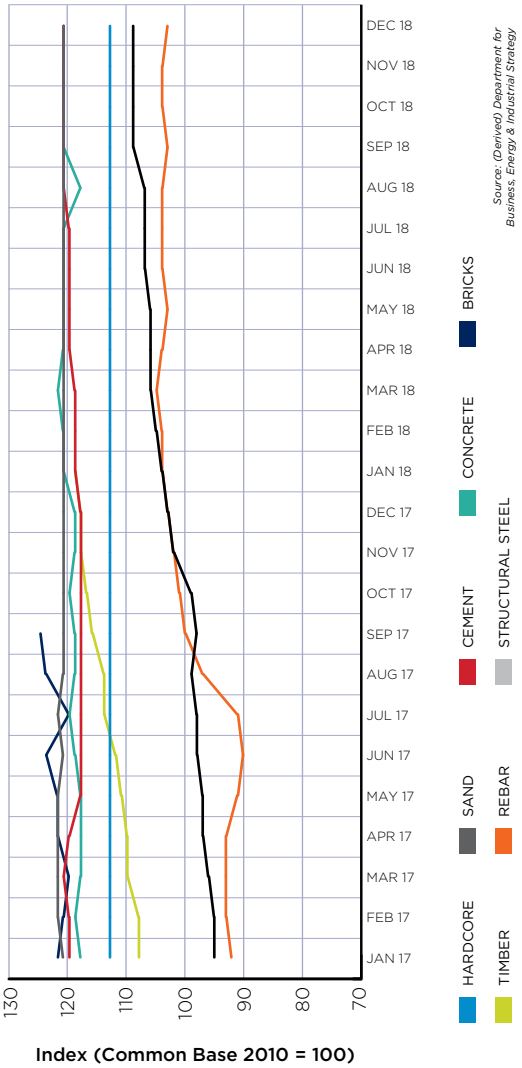
UK CONSTRUCTION OUTPUT BY SECTOR



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
NEW PUBLIC HOUSING	3,085	3,148	5,013	5,122	4,287	4,570	6,027	5,049	4,861	5,498	6,118
NEW PRIVATE HOUSING	20,236	13,896	16,330	17,807	17,377	19,012	23,816	26,277	29,717	32,182	36,461
NEW PRIVATE COMMERCIAL	36,276	27,161	26,003	26,637	24,015	24,023	25,541	26,219	28,183	29,552	29,076
NEW PRIVATE INDUSTRIAL	5,226	3,666	4,062	3,678	4,029	3,658	4,244	4,733	4,439	4,308	4,893
NEW PUBLIC WORKS	10,068	12,177	15,808	14,614	11,546	10,439	10,350	10,374	10,770	10,387	9,766
NEW INFRASTRUCTURE	11,144	12,759	15,786	17,105	15,296	15,641	15,162	18,403	17,851	19,055	20,656
REPAIRS AND MAINTENANCE	52,403	47,342	47,265	48,170	47,415	48,425	51,884	52,064	52,871	55,300	56,610

NOTE: Figures are Construction Output Volume (£ million)

UK CONSTRUCTION MATERIALS MONTHLY AVERAGE PRICE INDEX



	2017												2018											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Hardcore	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
Sand	121	122	122	122	122	121	122	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121
Cement	120	120	121	120	118	118	118	118	118	118	118	118	119	119	119	120	120	120	120	121	121	121	121	121
Concrete	118	119	118	118	118	119	120	119	119	120	119	119	121	121	122	121	121	121	121	118	121	121	121	121
Bricks	122	121	120	122	122	124	120	124	125	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
Timber	108	108	110	110	111	112	114	114	116	117	118	118	119	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
Structural Steel	95	95	96	97	97	98	98	99	98	99	102	103	104	105	106	106	106	107	107	107	109	109	109	109
Rebar	92	93	93	93	91	90	91	97	100	101	102	103	104	104	105	104	103	104	104	104	103	104	104	103

NP = Not Published

HARBOUR CENTRAL
LONDON, UK

A residential multi-tower development comprising of a 42 storey tower, a 37 storey build to rent tower and a 27 storey affordable building, to provide 980 new apartments

UK CONSTRUCTION COST DATA

10 Building Costs

18 Average Construction Payment Drawdown

20 Construction Elements

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff		Edinburgh	
			Low	High	Low	High	Low	High	Low	High	Low	High
Offices; Prestige CBD	10-25 Storeys	GBP/m²	1,440	2,050	1,960	2,900	2,100	3,000	1,760	2,500	1,880	2,650
Offices; Investment CBD	Up to 10 Storeys	GBP/m²	1,260	1,660	1,600	2,250	1,700	2,450	1,540	2,050	1,640	2,200
Offices; Investment CBD	10-25 Storeys	GBP/m²	1,360	2,050	1,920	2,900	1,920	3,000	1,660	2,500	1,760	2,650
Offices; Non CBD Investment	1-3 Storeys	GBP/m²	1,000	1,280	1,500	1,960	1,280	1,920	1,240	1,560	1,320	1,660
Hotels; Multi-Storey	Five Star Rating	GBP/m²	1,680	2,300	2,250	3,200	2,450	3,300	2,100	2,850	2,200	3,050
Hotels; Multi-Storey	Four Star Rating	GBP/m²	1,160	1,860	1,620	2,400	2,050	2,600	1,460	2,300	1,540	2,450
Hotels; Multi-Storey	Three Star Rating	GBP/m²	1,060	1,560	1,360	2,100	1,440	1,920	1,300	1,920	1,400	2,050
Hotels; Multi-Storey	Five Star Rating	GBP/Bedroom	117,500	235,000	157,500	327,500	160,000	320,000	145,000	290,000	157,500	310,000
Hotels; Multi-Storey	Four Star Rating	GBP/Bedroom	68,000	102,500	81,000	142,500	96,000	155,000	83,000	125,000	88,000	132,500
Hotels; Multi-Storey	Three Star Rating	GBP/Bedroom	34,000	71,000	51,000	97,000	53,000	102,500	42,000	87,000	44,500	93,000
Car Park	Open Deck; Multi-Storey	GBP/m²	265	530	380	720	430	850	330	650	360	700
Car Park	Basement: CBD	GBP/m²	670	1,140	850	1,460	1,020	1,600	820	1,420	870	1,500
Car Park	Basement: Other Than CBD	GBP/m²	510	1,020	690	1,360	910	1,280	630	1,240	670	1,340
Car Park	Undercroft: Other Than CBD	GBP/m²	350	840	450	1,180	540	1,180	420	1,040	450	1,100
Car Park	Open Deck; Multi-Storey	GBP/Car	6,400	12,750	8,600	18,000	10,750	19,250	7,800	15,500	8,300	16,750
Car Park	Basement: CBD	GBP/Car	17,000	29,250	22,250	40,250	23,500	34,000	20,750	36,250	22,000	38,500
Car Park	Basement: Other Than CBD	GBP/Car	12,750	25,500	19,250	34,000	21,250	32,000	15,500	31,250	16,750	33,250
Car Park	Undercroft: Other Than CBD	GBP/Car	8,500	14,250	11,250	19,500	12,250	23,500	10,500	17,750	11,250	18,750
Industrial 6.0m to U/S Truss	4,500 m² fl. Area; Metal Cladding	GBP/m²	290	520	430	600	430	690	360	650	390	700
Industrial; att. a/c offices 200m²	200m²	GBP/m²	680	1,200	970	1,540	960	1,660	830	1,460	880	1,540

Work Type	Description	Unit	Leeds		London		Manchester		Sheffield		Thames Valley	
			Low	High	Low	High	Low	High	Low	High	Low	High
Offices; Prestige CBD	10-25 Storeys	GBP/m²	2,050	3,500	3,000	3,900	2,200	2,850	2,050	3,500	2,700	2,900
Offices; Investment CBD	up to 10 Storeys	GBP/m²	1,460	2,150	2,700	3,500	1,880	2,850	1,460	2,100	2,050	2,700
Offices; Investment CBD	10-25 Storeys	GBP/m²	1,920	2,550	2,850	3,700	2,150	2,850	1,920	2,500	2,400	2,800
Offices; Non CBD Investment	1-3 Storeys	GBP/m²	990	1,660	1,760	2,450	1,280	1,860	990	1,660	1,680	2,300
Hotels; Multi-Storey	Five Star Rating	GBP/m²	2,050	3,250	2,850	3,800	2,350	3,200	2,050	3,250	2,700	3,500
Hotels; Multi-Storey	Four Star Rating	GBP/m²	1,520	2,400	2,150	3,400	1,860	2,750	1,520	2,400	2,050	3,150
Hotels; Multi-Storey	Three Star Rating	GBP/m²	1,280	1,700	1,920	2,450	1,580	1,960	1,280	1,700	1,800	2,350
Hotels; Multi-Storey	Five Star Rating	GBP/Bedroom	182,500	322,500	212,500	422,500	175,000	347,500	182,500	322,500	205,000	395,000
Hotels; Multi-Storey	Four Star Rating	GBP/Bedroom	102,500	202,500	122,500	182,500	98,000	150,000	102,500	202,500	90,000	172,500
Hotels; Multi-Storey	Three Star Rating	GBP/Bedroom	42,750	89,000	64,000	137,500	60,000	105,000	42,750	89,000	63,000	137,500
Car Park	Open Deck; Multi-Storey	GBP/m²	330	990	460	920	580	740	330	990	450	900
Car Park	Basement: CBD	GBP/m²	630	1,020	1,220	1,980	1,100	1,600	630	1,020	1,100	1,900
Car Park	Basement: Other Than CBD	GBP/m²	650	1,300	1,200	1,880	1,040	1,500	650	1,300	1,080	1,840
Car Park	Undercroft: Other Than CBD	GBP/m²	430	1,080	600	1,500	710	1,240	430	1,080	580	1,460
Car Park	Open Deck; Multi-Storey	GBP/Car	8,000	16,000	11,250	22,500	9,400	18,500	8,000	16,000	10,250	19,000
Car Park	Basement: CBD	GBP/Car	21,500	44,000	30,000	54,000	24,750	43,250	21,250	44,000	27,750	51,000
Car Park	Basement: Other Than CBD	GBP/Car	16,250	32,250	22,500	44,750	18,750	37,250	16,250	32,250	21,250	42,000
Car Park	Undercroft: Other Than CBD	GBP/Car	10,750	18,250	15,000	26,250	12,500	21,250	10,750	18,250	12,250	22,000
Industrial 6.0m to U/S Truss	4,500 m² fl. Area; Metal Cladding	GBP/m²	380	690	510	910	510	740	380	690	500	900
Industrial; att. a/c offices 200m²	200m²	GBP/m²	880	1,540	1,220	2,150	990	1,760	880	1,540	1,200	2,100

BUILDING COSTS

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff		Edinburgh	
			Low	High	Low	High	Low	High	Low	High	Low	High
Industrial; att. a/c offices 400m²	400m²	GBP/m²	600	1,100	890	1,500	850	1,600	730	1,340	770	1,440
Aged Care	Single Storey facility	GBP/m²	1,020	1,520	1,340	2,050	1,600	2,350	1,240	1,860	1,340	2,000
Aged Care	Multi Storey facility	GBP/m²	1,140	1,680	1,520	2,300	1,520	1,860	1,400	2,100	1,500	2,250
Private Hospitals; low Rise	45-60m² floor area per bed	GBP/m²	1,520	1,860	2,150	2,600	2,150	2,850	1,860	2,400	2,000	2,550
Private Hospitals; low Rise	55-80m² floor area per bed; Major Operating Theatre	GBP/m²	1,680	2,550	2,400	3,500	2,700	3,750	2,100	3,150	2,250	3,350
Retail; Regional Shopping Centres	Department Store	GBP/m²	1,440	2,550	1,900	3,350	1,980	3,650	1,760	3,150	1,880	3,350
Retail; Regional Shopping Centres	Supermarket / Variety store	GBP/m²	1,020	1,520	1,340	2,050	1,440	2,150	1,240	1,860	1,340	2,000
Retail; Regional Shopping Centres	Discount Department store	GBP/m²	1,200	1,760	1,560	2,350	1,680	2,500	1,460	2,200	1,540	2,350
Retail; Regional Shopping Centres	Malls	GBP/m²	2,250	3,100	2,950	4,150	2,950	4,150	2,700	3,800	2,900	4,050
Retail; Regional Shopping Centres	Speciality Shops	GBP/m²	1,280	1,860	1,700	2,550	1,780	2,600	1,560	2,300	1,660	2,450
Retail; General	Small shops and Showrooms	GBP/m²	700	1,320	930	1,780	930	1,760	860	1,620	920	1,720
Residential; General	Single and Double Storey	GBP/m²	640	830	850	1,280	1,020	1,380	780	1,040	830	1,100
Residential; General	1 to 3 storey units; 85 -120m² per unit	GBP/m²	760	1,000	980	1,380	1,580	1,920	930	1,240	990	1,340
Residential; General	Townhouses; 90 -120m² per unit	GBP/m²	840	1,080	1,000	1,440	1,580	1,920	1,040	1,360	1,100	1,440
Residential; General	Single and Double Storey	GBP/House	37,750	55,000	51,000	75,000	135,000	232,500	46,500	68,000	49,250	72,000
Residential; General	1 to 3 storey units; 85 -120m² per unit	GBP/Unit	64,000	117,500	83,000	170,000	135,000	232,500	78,000	145,000	83,000	157,500
Residential; General	Townhouses; 90 -120m² per unit	GBP/Unit	72,000	125,000	90,000	175,000	142,500	232,500	88,000	155,000	94,000	167,500
Residential; Multi Storey Units	Up to 10 Storeys with lift: 60 -70m² per unit	GBP/m²	1,320	1,440	1,680	2,100	1,240	1,760	1,640	1,760	1,720	1,880

UK CONSTRUCTION COST DATA

Work Type	Description	Unit	Leeds		London		Manchester		Sheffield		Thames Valley	
			Low	High	Low	High	Low	High	Low	High	Low	High
Industrial; att. a/c offices 400m²	400m²	GBP/m²	780	1,440	1,060	2,000	880	1,620	780	1,440	1,060	1,980
Aged Care	Single Storey facility	GBP/m²	1,340	2,050	1,760	2,650	1,500	2,250	1,340	2,000	1,740	2,650
Aged Care	Multi Storey facility	GBP/m²	1,520	2,250	1,980	2,900	1,700	2,500	1,500	2,250	1,960	2,900
Private Hospitals; low Rise	45-60m² floor area per bed	GBP/m²	2,450	3,550	2,650	3,350	2,250	2,850	2,450	3,550	2,500	3,200
Private Hospitals; low Rise	55-80m² floor area per bed; Major Operating Theatre	GBP/m²	3,450	4,550	2,900	4,400	2,500	3,750	3,450	4,550	2,800	4,300
Retail; Regional Shopping Centres	Department Store	GBP/m²	1,840	3,250	2,500	4,400	2,100	3,750	1,840	3,250	2,300	4,100
Retail; Regional Shopping Centres	Supermarket / Variety store	GBP/m²	1,300	2,800	1,760	2,650	1,500	2,250	1,300	2,800	1,660	2,500
Retail; Regional Shopping Centres	Discount Department store	GBP/m²	1,520	2,300	2,050	3,050	1,760	2,600	1,520	2,300	1,940	2,850
Retail; Regional Shopping Centres	Malls	GBP/m²	2,700	3,800	3,600	5,100	3,050	4,300	2,700	3,800	3,000	4,750
Retail; Regional Shopping Centres	Speciality Shops	GBP/m²	1,620	2,400	2,200	3,200	1,860	2,750	1,620	2,400	2,050	3,000
Retail; General	Small shops and Showrooms	GBP/m²	870	1,620	1,160	2,150	980	1,840	860	1,620	1,100	2,000
Residential; General	Single and Double Storey	GBP/m²	810	1,080	1,400	1,680	940	1,260	810	1,080	1,360	1,660
Residential; General	1 to 3 storey units; 85 -120m² per unit	GBP/m²	880	1,440	1,380	2,050	1,120	1,500	880	1,440	1,300	2,000
Residential; General	Townhouses; 90 -120m² per unit	GBP/m²	1,080	1,460	1,400	1,920	1,240	1,620	1,080	1,460	1,360	1,860

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff		Edinburgh	
			Low	High	Low	High	Low	High	Low	High	Low	High
Residential; Multi Storey Units	Up to 10 Storeys with lift: 90 -120m² per unit	GBP/m²	1,440	1,860	1,720	2,350	1,240	1,760	1,760	2,300	1,880	2,450
Residential; Multi Storey Units	Up to 10 Storeys with lift: 60 -70m² per unit	GBP/Unit	76,000	100,000	115,000	162,500	74,000	122,500	93,000	125,000	99,000	132,500
Residential; Multi Storey Units	Up to 10 Storeys with lift: 90 -120m² per unit	GBP/Unit	127,500	207,500	182,500	335,000	112,500	210,000	155,000	260,000	167,500	275,000
Office Fit-Out	Insurance Offices; Government Departments; Open Planned	GBP/m²	290	430	360	670	420	590	360	520	390	560
Office Fit-Out	Major Companies Headquarters; Open Planned	GBP/m²	460	820	590	1,280	590	960	570	1,020	610	1,100
Office Fit-Out	Solicitors, Financiers; Open Planned	GBP/m²	540	1,080	710	1,460	590	850	670	1,340	710	1,420
Office Fit-Out	Executive and Front of House; Open Planned	GBP/m²	580	1,240	780	2,100	750	1,180	720	1,540	760	1,640
Workstations	Secretarial	GBP/Each	3,000	4,150	3,950	5,800	4,150	5,900	3,650	5,200	3,850	5,500
Workstations	Technical Staff	GBP/Each	4,650	6,000	6,200	8,000	6,500	8,300	5,700	7,300	6,200	7,700
Workstations	Executive	GBP/Each	5,100	10,000	6,600	13,750	6,600	14,000	6,200	12,500	6,700	13,250
Hotel FF&E	Five Star Rating	GBP/Bedroom	17,000	67,000	22,250	93,000	24,000	96,000	20,750	83,000	22,000	88,000
Hotel FF&E	Four Star Rating	GBP/Bedroom	10,250	16,750	13,500	22,750	14,250	23,500	12,500	20,750	13,250	22,000
Hotel FF&E	Three Star Rating	GBP/Bedroom	6,800	10,000	8,900	13,750	9,500	14,250	8,300	12,500	8,800	13,500
Office Refurbishment	CBD Offices; Typical Floor	GBP/m²	255	840	340	1,280	360	1,180	320	1,040	340	1,100

UK CONSTRUCTION COST DATA

Work Type	Description	Unit	Leeds		London		Manchester		Sheffield		Thames Valley	
			Low	High	Low	High	Low	High	Low	High	Low	High
Residential; General	Single and Double Storey	GBP/House	48,500	122,500	125,000	145,000	56,000	81,000	48,250	122,500	120,000	150,000
Residential; General	1 to 3 storey units; 85 -120m² per unit	GBP/Unit	81,000	152,500	157,500	197,500	105,000	175,000	81,000	152,500	150,000	190,000
Residential; General	Townhouses; 90 -120m² per unit	GBP/Unit	92,000	162,500	152,500	220,000	110,000	185,000	92,000	162,500	150,000	210,000
Residential; Multi Storey Units	Up to 10 Storeys with lift: 60 -70m² per unit	GBP/m²	1,620	1,840	2,550	4,450	1,820	2,150	1,620	1,840	1,900	3,000
Residential; Multi Storey Units	Up to 10 Storeys with lift: 90 -120m² per unit	GBP/m²	1,880	2,350	2,550	4,250	2,100	2,650	1,880	2,350	1,900	2,900
Residential; Multi Storey Units	Up to 10 Storeys with lift: 60 -70m² per unit	GBP/Unit	97,000	130,000	212,500	370,000	122,500	150,000	97,000	130,000	180,000	315,000
Residential; Multi Storey Units	Up to 10 Storeys with lift: 90 -120m² per unit	GBP/Unit	165,000	272,500	332,500	552,500	187,500	312,500	165,000	272,500	200,000	350,000
Office Fit-Out	Insurance Offices; Government Departments; Open Planned	GBP/m²	380	550	570	750	540	630	380	550	550	700
Office Fit-Out	Major Companies Headquarters; Open Planned	GBP/m²	500	770	690	1,080	670	1,100	500	770	650	1,000
Office Fit-Out	Solicitors, Financiers; Open Planned	GBP/m²	500	770	690	1,140	670	980	500	770	650	1,060
Office Fit-Out	Executive and Front of House; Open Planned	GBP/m²	670	1,120	940	1,500	960	1,360	670	1,120	850	1,300
Workstations	Secretarial	GBP/Each	3,850	5,500	5,100	7,300	4,300	6,200	3,850	5,500	4,500	6,500
Workstations	Technical Staff	GBP/Each	6,000	7,700	8,000	10,250	6,800	8,700	6,000	7,600	7,500	9,600
Workstations	Executive	GBP/Each	6,600	22,500	8,700	17,500	7,400	15,000	6,600	22,500	8,500	16,500
Hotel FF&E	Five Star Rating	GBP/Bedroom	21,750	87,000	31,250	125,000	24,750	100,000	21,500	86,000	25,000	90,000
Hotel FF&E	Four Star Rating	GBP/Bedroom	12,750	21,250	18,750	31,250	14,750	24,750	12,750	21,250	16,000	28,000
Hotel FF&E	Three Star Rating	GBP/Bedroom	8,500	13,000	12,500	18,750	9,900	15,250	8,500	12,750	12,000	18,000
Office Refurbishment	CBD Offices; Typical Floor	GBP/m²	340	1,100	470	1,500	380	1,260	340	1,100	450	1,300

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff		Edinburgh	
			Low	High	Low	High	Low	High	Low	High	Low	High
Recreational Facilities	Regional stadium	GBP/Seat	1,720	2,800	1,760	2,900	1,700	2,800	1,700	2,800	1,720	2,800
Recreational Facilities	Regional feature stadium	GBP/Seat	2,500	5,200	2,550	5,300	2,450	5,100	2,450	5,100	2,500	5,200
Recreational Facilities	National iconic stadium	GBP/Seat	4,600	8,300	4,450	8,600	4,500	8,200	4,500	8,200	4,550	8,300
Recreational Facilities	Indoor Arena	GBP/Seat	7,000	8,800	6,900	8,900	6,800	8,900	6,800	8,900	6,900	9,000
Recreational Facilities	Indoor Swimming pools - 50m (including dry sports facilities)	GBP/m²	3,500	4,850	3,450	4,800	3,400	4,800	3,400	4,800	3,450	4,850
Site Works	Landscaping; Light, large areas, minimal planting	GBP/Hectare	25,000	102,500	34,000	145,000	55,000	162,500	31,250	125,000	33,250	132,500
Site Works	Landscaping; Dense shrubs, topsoil, grass	GBP/m²	25	40	25	50	35	55	25	45	30	50
Site Works	Landscaping; grassing, large areas, topsoil sowing, treating	GBP/m²	10	15	10	15	15	25	10	15	15	20
Site Works	Car Parks on Ground; Light Duty Paving	GBP/Car	760	1,260	1,020	1,800	1,340	1,980	930	1,560	990	1,660
Site Works	Car Parks on Ground; Heavy Duty Paving	GBP/Car	1,280	2,100	1,540	2,900	2,200	3,250	1,560	2,600	1,660	2,750
Site Works	Car Parks on Ground; Light Duty Paving to Shopping Centre Complex	GBP/Car	760	1,260	1,020	1,800	1,340	1,980	930	1,560	990	1,660
Site Works	Roads; asphalt incl. drainage and kerbs, Residential Estate 6.8m wide	GBP/m	600	1,260	780	1,800	1,100	1,920	730	1,560	770	1,660
Site Works	Roads; asphalt incl. drainage and kerbs, Industrial Estate 10.4m wide	GBP/m	840	1,660	1,140	2,450	1,460	2,600	1,040	2,100	1,100	2,250

Work Type	Description	Unit	Leeds		London		Manchester		Sheffield		Thames Valley	
			Low	High	Low	High	Low	High	Low	High	Low	High
Recreational Facilities	Regional stadium	GBP/Seat	1,620	2,650	1,740	2,850	1,760	2,900	1,620	2,650	1,720	2,800
Recreational Facilities	Regional feature stadium	GBP/Seat	2,350	4,850	2,500	5,200	2,550	5,300	2,350	4,850	2,500	5,200
Recreational Facilities	National iconic stadium	GBP/Seat	4,250	7,800	4,550	8,400	4,650	8,500	4,250	7,800	4,300	8,000
Recreational Facilities	Indoor Arena	GBP/Seat	6,500	8,400	7,000	9,000	7,100	9,200	6,500	8,400	6,400	8,400
Recreational Facilities	Indoor Swimming pools - 50m (including dry sports facilities)	GBP/m²	3,250	4,550	3,500	4,900	3,550	5,000	3,250	4,550	3,200	4,500
Site Works	Landscaping; Light, large areas, minimal planting	GBP/Hectare	32,250	130,000	43,500	182,500	37,250	147,500	32,250	127,500	39,750	170,000
Site Works	Landscaping; Dense shrubs, topsoil, grass	GBP/m²	25	45	40	75	35	60	25	45	35	70
Site Works	Landscaping; grassing, large areas, topsoil sowing, treating	GBP/m²	5	15	15	25	15	25	5	15	10	25
Site Works	Car Parks on Ground; Light Duty Paving	GBP/Car	970	1,720	1,380	2,250	1,120	1,880	960	1,720	1,280	2,150
Site Works	Car Parks on Ground; Heavy Duty Paving	GBP/Car	1,600	2,700	2,250	3,750	1,880	3,100	1,600	2,700	2,100	3,500
Site Works	Car Parks on Ground; Light Duty Paving to Shopping Centre Complex	GBP/Car	970	1,600	1,380	2,350	1,120	1,880	960	1,600	1,280	2,150
Site Works	Roads; asphalt incl. drainage and kerbs, Residential Estate 6.8m wide	GBP/m	750	1,600	1,080	2,350	870	1,880	750	1,600	980	2,200
Site Works	Roads; asphalt incl. drainage and kerbs, Industrial Estate 10.4m wide	GBP/m	1,080	2,150	1,500	3,000	1,240	2,500	1,080	2,150	1,440	2,850

AVERAGE CONSTRUCTION PAYMENT DRAWDOWN

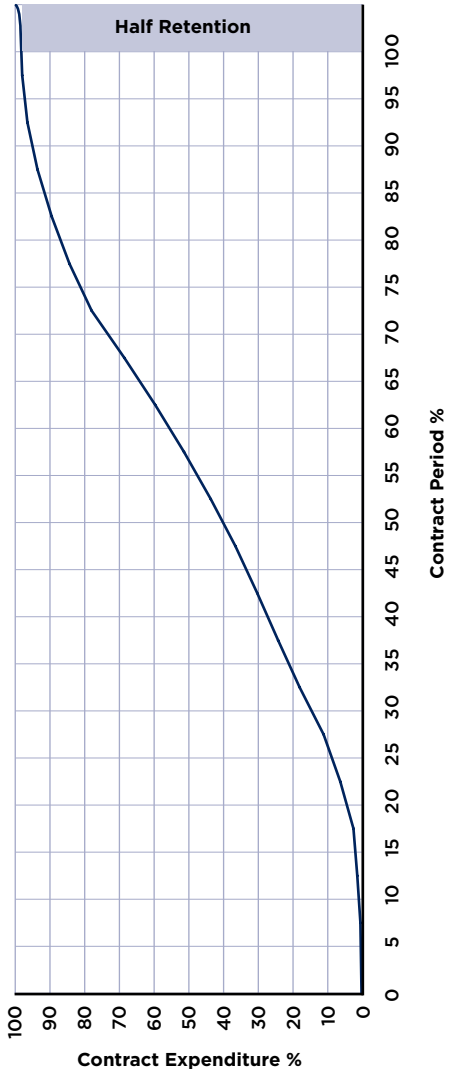
The tabulation below is derived from the statistical average of a series of case histories, which will give an indication of the anticipated rate of expenditure when used for specific project types for preliminary budgetary purposes.

Construction periods exclude various extensions, including wet weather, industrial disputes, etc.

All data is related to the date of submission of contractors' application to the client and not actual payment, which is generally one month later.

Half retention is assumed released at Practical Completion, the other half being released at end of Defects Liability Period.

Contract Period %	Contract Expenditure %
0	0
5	0.6
10	1.5
15	2.6
20	6.4
25	11.2
30	18.1
35	24.3
40	30.3
45	36.6
50	43.7
55	51.4
60	59.7
65	68.6
70	78
75	84.4
80	89.5
85	93.6
90	96.5
95	98
100	98.5
Half retention (1.5%) released at end of defects period	100



CONSTRUCTION ELEMENTS

The following rates are indicative only and include an allowance for profit and overheads but exclude preliminaries. The rates are not valid for tendering or pricing of variations.

Item	£			Unit
SUBSTRUCTURE				
Reinforced concrete pad footing (Grade 35)	480	-	590	m^2
Reinforced concrete slab on ground (Grade 35)	430	-	540	m^2
COLUMNS				
Reinforced concrete (600 x 600mm Grade 35)	210	-	270	m
Reinforced concrete (900 x 900mm Grade 35)	420	-	540	m
UPPER FLOORS (EXCLUDING BEAMS)				
150mm reinforced concrete suspended floor slab (Grade 35) on Holorib permanent formwork	65	-	90	m^2
150mm precast concrete suspended floor slab or beam and block floor with reinforced in situ concrete screed structural topping	90	-	110	m^2
200mm reinforced concrete suspended slab with high quality formwork for exposed finish	100	-	150	m^2
STAIRCASES				
1050mm wide reinforced concrete stair with painted steel tube balustrade (average rise 3.70m) including two flights and one half space landing	3,170	-	4,230	Rise
1200mm wide reinforced concrete stair with painted steel tube balustrade (average rise 3.70m) including two flights and one half space landing	4,220	-	5,280	Rise
2000mm wide grand public stair with glass and metal balustrade (4.00m rise) including three flights and two quarter space landings	12,510	-	18,780	Rise
ROOF				
RC Slab (Grade 35) graded to fall and built-up roofing membrane	120	-	170	m^2
Structural steel, Purlins and insulated metal deck roof 40 - 50 kg/m^2	100	-	140	m^2
EXTERNAL WALLS				
Cavity wall construction, 102mm stock facing brick outer skin; insulated cavity; 140mm blockwork inner skin	130	-	180	m^2
Double glazed window unit (casement type)	300	-	480	m^2
Glass curtain wall system, capped stick-built system	440	-	730	m^2
EXTERNAL DOORS (INCLUDING IRONMONGERY)				
Single leaf solid core door	980	-	1,260	no.
Double leaf glazed door	1,400	-	1,680	no.
Double leaf automatic operating door	4,480	-	7,830	no.

CONSTRUCTION ELEMENTS

Item	£			Unit
INTERIOR WALLS				
250mm reinforced concrete wall (Grade 35)	170	-	190	m²
100mm block wall	25	-	31	m²
140mm block wall	28	-	42	m²
Plasterboard metal stud wall, single layer each side	37	-	52	m²
INTERNAL DOOR SET (INCLUDING IRONMONGERY)				
Single leaf solid core flush door	470	-	790	no.
Single leaf half hour fire door	520	-	850	no.
Single leaf one hour fire door	630	-	1,010	no.
INTERIOR SCREENS				
Laminated toilet partition	870	-	1,310	Each
Fully glazed office partition full (2.8m) height, frameless joints				
Single glazed	320	-	530	m
Double glazed	950	-	1,170	m
WALL FINISHES				
Plaster and emulsion paint	16	-	22	m²
Plaster and vinyl fabric wallpaper	21	-	36	m²
Cement render and ceramic tile	61	-	98	m²
Granite tiles	102	-	160	m²

Item	£			Unit
CEILING FINISHES				
Metal framed plasterboard ceiling, painted	27	-	33	m²
Exposed grid suspended ceiling with mineral fibre board acoustic ceiling	26	-	36	m²
Hygienic suspended ceiling system	30	-	42	m²
FLOOR FINISHES				
Carpet tile	18	-	39	m²
Ceramic tile	46	-	88	m²
Raised Access floors, standard duty	32	-	47	m²
SERVICES - SANITARY AND PLUMBING				
Average cost per plumbing point including fixture, soil waste and vent; excluding DOC M Pack	410	-	530	no.
Average cost for storm water drains (site area)	15	-	19	m²
SERVICES - VERTICAL TRANSPORTATION				
Glass sided escalator (4m rise)	95,000	-	135,000	no.
13 passenger lift serving 4 floors	80,000	-	110,000	no.
Hydraulic lift, 2-stop, car-size 8-13 persons	40,000	-	45,000	no.

BLOSSOM STREET
MANCHESTER, UK

Two seven storey blocks providing a range of 1 bed apartments to 3 bed townhouses

ESTIMATING DATA

26 Definition of Office Fit-out Categories

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DEFINITION OF OFFICE FIT-OUT CATEGORIES

Building Element	Shell and Core	Cat A Fit-out	Cat B Fit-out
Building envelope	✓	✗	✗
Emergency staircases	✓	✗	✗
Balustrades and handrails to emergency stairs	✓	✗	✗
Accommodation stairs	✓	✗	✗
Balustrades and handrails to accommodation stairs	✓	✗	✗
Feature stairs	✗	✓	✗
Balustrades and handrails to feature stairs	✗	✓	✗
Lifts	✓	✗	✗
Base services, plant and equipment to edge of floor plates	✓	✗	✗
Life safety infrastructure, sprinkler pumps, tanks, risers, main fire alarm panels	✓	✗	✗
Finishes to main entrances	✓	✗	✗
Finishes to common areas	✓	✗	✗
Finishes to staircases fitted as part of shell and core	✓	✗	✗
Finishes to lifts	✓	✗	✗
Finishes to common toilets	✓	✗	✗
Sanitary fit-out of common toilets	✓	✗	✗
Suspended ceilings	✗	✓	✗
Raised access floors	✗	✓	✗
Extension of Basic Mechanical and Electrical Services, Lighting, Heating, Cooling and ventilation systems including controls, from the riser across the lettable floor space	✗	✓	✗
Sprinklers, fire alarms and basic safety signage	✗	✓	✗
Office carpets	✗	✓	✗
Distributed power to each floor but not to each terminal point	✗	✓	✗
Installation of Cellular Offices	✗	✗	✓
Enhanced finishes	✗	✗	✓
Conference / Meeting Room Facilities	✗	✗	✓
IT and AV installations	✗	✗	✓
Tea point and kitchen fit-out	✗	✗	✓
Furniture	✗	✗	✓

REINFORCEMENT RATIOS

The following ratios give an indication of the average weight of high tensile rod reinforcement per cubic metre of concrete (Grade 35) for the listed elements. Differing structural systems, ground conditions, height of buildings, load calculations and sizes of individual elements and grid sizes will result in considerable variation to the stated ratios. For project specific ratios, a civil & structural engineer should be consulted.

Element	kg/m³
Substructure	
Pile caps	115 - 200
Bored Piles (compression)	30 - 60
Bored Piles (tension)	150 - 250
Raft Foundation	100 - 150
RC pad footings	70 - 150
Ground beams	200 - 300
Basement	
Retaining Wall	150 - 250
RC Wall	75 - 150
Ground Bearing Slab	80 - 150
Edge Beams	220 - 300
Lift Pits	100 - 200
Above Ground	
Columns	150 - 450
Beams	180 - 300
Slab	90 - 200
Walls (core)	75 - 200
Lift Core	125 - 200
Stairs	130 - 160

METHOD OF MEASUREMENT OF BUILDING AREAS

The two tables below are designed for comparative purposes

The information provided is a summary from the RICS Code of Measurement Practice, effective globally from 18 May 2015.

These rules are intended as a brief guide only and the full RICS Code of Measuring Practice should be consulted if required. Advice regarding net lettable areas used for calculating revenues should be given by the client's commercial property agent.

Note from the 1st January 2016 a RICS Professional Statement (PS)[1] came into effect. The purpose of the statement was to change the rules for measurement for offices only from the standard RICS Code of Measuring Practice (6th edition) to IPMS (International Property Measurement Standards). NOTE the RICS Code of Measuring Practice (6th edition) still applies to all other building types. The PS affects GEA, GIA and NIA in respect of offices.

Gross External Area (GEA)
The area of a building measured externally (i.e. to the external face of the perimeter walls) at each floor level. The rules of measurement of gross external floor area are defined in the RICS Code of Measuring Practice (6th edition).

RICS Code of Measuring Practice (6th edition) applicable to all buildings except offices.

IPMS 1: Gross External Area (GEA)
The area of a building measured externally (i.e. to the external face of the perimeter walls) at each floor level. The rules of measurement of gross external floor area are defined in the RICS Code of Measuring Practice (6th edition) – adjusted below to reflect the implications of the RICS Professional Statement (PS) as applicable to offices only. Please refer to the RICS Professional Statement for a full definition.

RICS Professional Statement (PS) 2nd Edition effective from 1st May 2018, which affects the measurement of offices.

ALL BUILDINGS EXCLUDING OFFICES	
INCLUDING	**EXCLUDING**
Perimeter wall thickness and external projections	External open-sided balconies, covered ways and fire escapes
Areas occupied by internal walls and partitions	Canopies
Columns, piers, chimney breasts, stairwells, lift-wells, and the like	Open vehicle parking areas, roof terraces, and the like

OFFICES ONLY	
INCLUDING	**EXCLUDING**
Definition provided: the external area of basements is calculated by extending the exterior plane of the perimeter walls at ground floor level downwards, or by estimation of the wall thickness if the extent of the basement differs from the ground floor level	
Perimeter wall thickness and external projections	Fire escapes and open external stairways not being part of the structure
External open-sided balconies, covered ways. Now included but must be stated separately	
Areas occupied by internal walls and partitions	Canopies
Columns, piers, chimney breasts, stairwells, lift-wells, and the like	Open vehicle parking areas, non-accessible roof terraces, and the like

METHOD OF MEASUREMENT OF BUILDING AREAS

GROSS EXTERNAL AREA (GEA)	
ALL BUILDINGS EXCLUDING OFFICES	
INCLUDING	EXCLUDING
Atria and entrance halls, with clear height above, measured at base level only	Voids over or under structural, raked or stepped floors
	Open light wells upper level voids of an atrium - definition added in PS
Internal balconies	Greenhouses, garden stores, fuel stores, and the like in residential property
Structural, raked or stepped floors are to be treated as a level floor measured horizontally	Patios, decks at ground level - definition added in PS
Horizontal floors, whether accessible or not, below structural, raked or stepped floors	External car parking, equipment yards, cooling equipment and refuse areas - definition added in PS
Mezzanine areas intended for use with permanent access	Other ground level areas that are not fully enclosed - definition added in PS
Lift rooms, plant rooms, fuel stores, tank rooms which are housed in a covered structure of a permanent nature, whether or not above the main roof level	
Outbuildings which share at least one wall with the main building	
Loading bays	
Areas with a headroom of less than 1.5m	
Pavement vaults	
Garages	
Conservatories	

IPMS 1: Gross External Area (GEA)	
OFFICES ONLY	
INCLUDING	EXCLUDING
Accessible rooftop terraces – now included but must be stated separately	
Atria and entrance halls, with clear height above, measured at base level only	Voids over or under structural, raked or stepped floors
	Open light wells upper level voids of an atrium - definition added in PS
Internal balconies also called covered galleries are included but must be stated separately as different interpretations may have been applied regarding their inclusion	Greenhouses, garden stores, fuel stores, and the like in residential property
Structural, raked or stepped floors are to be treated as a level floor measured horizontally	Patios, decks at ground level - definition added in PS
Horizontal floors, whether accessible or not, below structural, raked or stepped floors	External car parking, equipment yards, cooling equipment and refuse areas - definition added in PS
Mezzanine areas intended for use with permanent access	Other ground level areas that are not fully enclosed - definition added in PS
Lift rooms, plant rooms, fuel stores, tank rooms which are housed in a covered structure of a permanent nature, whether or not above the main roof level	
Outbuildings which share at least one wall with the main building	
Loading bays	
Areas with a headroom of less than 1.5m	
Pavement vaults	
Garages	
Conservatories	

METHOD OF MEASUREMENT OF BUILDING AREAS

Gross Internal Floor Area (GIFA) (or Gross Internal Area (GIA))
The area of a building measured to the internal face of the perimeter walls at each floor level. The rules of measurement of gross internal floor area are defined in the RICS Code of Measuring Practice (6th edition).

RICS Code of Measuring Practice (6th edition) applicable to all buildings except offices

ESTIMATING DATA

IPMS 2 - Office: Gross Internal Floor Area (GIFA) (or Gross Internal Area (GIA))
The area of a building measured to the internal face of the perimeter walls at each floor level. The rules of measurement of gross internal floor area are defined in the RICS Code of Measuring Practice (6th edition). – adjusted below to reflect the implications of the RICS Professional Statement (PS) as applicable to offices only. Please refer to the RICS Professional Statement for a full definition.

RICS Professional Statement (PS) 2nd Edition effective from 1st May 2018, which affects the measurement of offices.

Using IPMS 2 offices are separated for measurement into eight component areas:
Component A – Vertical penetration e.g. lift / elevator shaft and ducts
Component B – Structural elements all structural walls to inside of internal dominant face
Component C – Technical services e.g. plant rooms, lift / elevator motor rooms and maintenance rooms
Component D – Hygiene areas e.g. toilet facilities, cleaners, shower room and changing room
Component E – Circulation areas – all horizontal circulation areas
Component F – Amenities e.g. cafeteria, day care facilities, fitness areas and prayer rooms
Component G – Workspace, e.g. the area available for use by personnel, furniture and equipment for office purposes
Component H – Other areas including balconies, covered galleries, internal car parking and storage rooms
If an area is for multifunctional use, it is to be stated as its principal use.
Limited use areas must be identified, measured and stated separately within IPMS reported areas.

OFFICES ONLY	
INCLUDING	**EXCLUDING**
Definition added – the sum of the areas of each floor of an office building measured to the internal dominant face reported on a component-by-component basis for each floor of a building	
The internal dominant face is the inside finished surface comprising 50% or more of the surface area for each vertical section forming an internal perimeter. Where the internal dominant face is a window the internal dominant face is taken to the glazing	

METHOD OF MEASUREMENT OF BUILDING AREAS

Gross Internal Floor Area (GIFA) (or Gross Internal Area (GIA))	
ALL BUILDINGS EXCLUDING OFFICES	
INCLUDING	**EXCLUDING**
Areas occupied by internal walls and partitions projections	Perimeter wall thicknesses and external projections
Columns, piers, chimney breasts, stairwells, lift-wells, other internal projections, vertical ducts, and the like	External open-sided balconies, covered ways and fire escapes
Enclosed walkways or passages between separate buildings – definition added in PS	
Atria and entrance halls, with clear height above, measured at base level only	Canopies
Internal open-sided balconies, walkways, and the like	Voids over or under structural, raked or stepped floors
	Accessible rooftop terraces – normally excluded
Structural, raked or stepped floors are to be treated as a level floor measured horizontally	Greenhouses, garden stores, fuel stores, and the like in residential property

IPMS 2 - Office: Gross Internal Floor Area (GIFA) (or Gross Internal Area (GIA))	
OFFICES ONLY	
INCLUDING	**EXCLUDING**
Areas occupied by internal walls and partitions projections	Perimeter wall thicknesses and external projections
Columns, piers, chimney breasts, stairwells, lift-wells, other internal projections, vertical ducts, and the like	Open external stairways not being part of the structure e.g. fire escapes
External balconies often referred to as external open sided balconies – included but stated separately	
Enclosed walkways or passages between separate buildings – definition added in PS	
Atria and entrance halls, with clear height above, measured at base level only	Canopies
Areas occupied by the reveals of windows when measured and assessed as the internal dominant face - definition added in PS	
Internal open-sided balconies, walkways, and the like - included but stated separately	Voids over or under structural, raked or stepped floors
External balconies often referred to as external open sided balconies – included but stated separately	
Accessible rooftop terraces included but stated separately	
Structural, raked or stepped floors are to be treated as a level floor measured horizontally	Greenhouses, garden stores, fuel stores, and the like in residential property

METHOD OF MEASUREMENT OF BUILDING AREAS

Gross Internal Floor Area (GIFA) (or Gross Internal Area (GIA))	
ALL BUILDINGS EXCLUDING OFFICES	
INCLUDING	**EXCLUDING**
Horizontal floors, with permanent access, below structural, raked or stepped floors	Patios, decks at ground level not forming part of the structure – definition added in PS
Corridors of a permanent essential nature (e.g. fire corridors, smoke lobbies)	External car parking, equipment yards, cooling equipment and refuse areas - definition added in PS
Mezzanine floor areas with permanent access	Other ground level areas that are not fully enclosed - definition added in PS
Lift rooms, plant rooms, fuel stores, tank rooms which are housed in a covered structure of a permanent nature, whether or not above the main roof level	
Service accommodation such as toilets, toilet lobbies, bathrooms, showers, changing rooms, cleaners' rooms, and the like	
Projection rooms	
Voids over stairwells and lift shafts on upper floors	
Loading bays	
Areas with a headroom of less than 1.5m	
Pavement vaults	
Garages	
Conservatories	

IPMS 2 - Office: Gross Internal Floor Area (GIFA) (or Gross Internal Area (GIA))	
OFFICES ONLY	
INCLUDING	**EXCLUDING**
Horizontal floors, with permanent access, below structural, raked or stepped floors	Patios, decks at ground level not forming part of the structure - definition added in PS
Corridors of a permanent essential nature (e.g. fire corridors, smoke lobbies)	External car parking, equipment yards, cooling equipment and refuse areas - definition added in PS
Mezzanine floor areas with permanent access	Other ground level areas that are not fully enclosed - definition added in PS
Lift rooms, plant rooms, fuel stores, tank rooms which are housed in a covered structure of a permanent nature, whether or not above the main roof level	
Service accommodation such as toilets, toilet lobbies, bathrooms, showers, changing rooms, cleaners' rooms, and the like	
Projection rooms	
Voids over stairwells and lift shafts on upper floors	
Loading bays	
Areas with headroom of less than 1.5m - refer to PS rules. The internal dominant face is the inside finished surface comprising 50% or more of the surface area for each vertical section forming an internal perimeter	
Pavement vaults	
Garages	
Conservatories	

METHOD OF MEASUREMENT OF BUILDING AREAS

Net Internal Area (NIA)
The usable area within a building measured to the internal face of the perimeter walls at each floor level. The rules of measurement of net internal area are defined in the RICS Code of Measuring Practice (6th edition).

RICS Code of Measuring Practice (6th edition) applicable to all buildings except offices

ALL BUILDINGS EXCLUDING OFFICES	
INCLUDING	**EXCLUDING**
Atria with clear height above, measured at base level only excluding common areas	Those parts of entrance halls, atria, landings and balconies used in common
Entrance halls excluding common areas	Toilets, toilet lobbies, bathrooms, cleaners' rooms, and the like
Notional lift lobbies and notional fire corridors	Lift rooms, plant rooms, tank rooms (other than those of a trade process nature), fuel stores, and the like
Kitchens	Stairwells, lift-wells and permanent lift lobbies
Built-in units, cupboards, and the like occupying usable areas	Corridors and other circulation areas where used in common with other occupiers
Ramps, sloping areas and steps within usable areas	Permanent circulation areas, corridors and thresholds/ recesses associated with access, but not those parts that are usable areas

IPMS 3 - Office: Net Internal Area (NIA)
The usable area within a building measured to the internal face of the perimeter walls at each floor level. The rules of measurement of net internal area are defined in the RICS Code of Measuring Practice (6th edition) – adjusted below to reflect the implications of the RICS Professional Statement (PS) as applicable to offices only. Please refer to the RICS Professional Statement for a full definition.

RICS Professional Statement (PS) 2nd Edition effective from 1st May 2018, which affects the measurement of offices.

OFFICES ONLY	
INCLUDING	**EXCLUDING**
Definition added: The floor area available on an exclusive basis to an occupier, but excluding standard facilities and shared circulation areas, and calculated on an occupier-by-occupier floor-by-floor basis for each building. All internal walls and columns with an occupant; exclusive area included within IPMS 3 - office. The floor area is taken to the internal dominant face and, where there is a common wall with an adjacent tenant, to the centre line of the common wall.	
Atria with clear height above, measured at base level only excluding common areas	Those parts of entrance halls, atria, landings and balconies used in common
Entrance halls excluding common areas	Toilets, toilet lobbies, bathrooms, cleaners' rooms, and the like
Notional lift lobbies and notional fire corridors	Lift rooms, plant rooms, tank rooms (other than those of a trade process nature), fuel stores, and the like
Kitchens	Stairwells, lift-wells and permanent lift lobbies
Built-in units, cupboards, and the like occupying usable areas	Corridors and other circulation areas where used in common with other occupiers
Ramps, sloping areas and steps within usable areas	Permanent circulation areas, corridors and thresholds/ recesses associated with access, but not those parts that are usable areas

METHOD OF MEASUREMENT OF BUILDING AREAS

Net Internal Area (NIA)	
ALL BUILDINGS EXCLUDING OFFICES	
INCLUDING	EXCLUDING
Areas occupied by ventilation/heating grilles	Areas under the control of service or other external authorities including meter cupboards and statutory service supply point
Areas occupied by skirting and perimeter trunking	Internal structural walls, walls enclosing excluded areas, columns, piers, chimney breasts, other projections, vertical ducts, walls separating tenancies and the like
Areas occupied by non-structural walls subdividing accommodation in sole occupancy	The space occupied by permanent and continuous air-conditioning, heating or cooling apparatus, and ducting in so far as the space it occupies is rendered substantially unusable
Pavement vaults	The space occupied by permanent, intermittent air-conditioning, heating or cooling apparatus protruding 0.25m or more into the usable area
	Areas with a headroom of less than 1.5m
	Areas rendered substantially unusable by virtue of having a dimension between opposite faces of less than 0.25m
	Vehicle parking areas (the number and type of spaces noted)

IPMS 3 - Office: Net Internal Area (NIA)	
OFFICES ONLY	
INCLUDING	EXCLUDING
Areas occupied by ventilation/heating grilles	Areas under the control of service or other external authorities including meter cupboards and statutory service supply point
Areas occupied by skirting and perimeter trunking	
All internal walls and columns	
Areas occupied by non-structural walls subdividing accommodation in sole occupancy	The space occupied by permanent and continuous air-conditioning, heating or cooling apparatus, and ducting in so far as the space it occupies is rendered substantially unusable
Pavement vaults	The space occupied by permanent, intermittent air-conditioning, heating or cooling apparatus protruding 0.25m or more into the usable area
Areas with a headroom of less than 1.5m – now included but may be stated separately as a limited use area	
Areas rendered substantially unusable by virtue of having a dimension between opposite faces of less than 0.25m	Measured but identified separately
	Vehicle parking areas (the number and type of spaces noted)

ESTIMATING DATA

METHOD OF MEASUREMENT OF BUILDING AREAS

Net Internal Area (NIA)	
ALL BUILDINGS EXCLUDING OFFICES	
INCLUDING	EXCLUDING
	Enclosed walkways or passages between separate buildings – definition added in PS
	Accessible rooftop terraces – normally excluded
	Open external stairways not being part of the structure e.g. open framework fire escapes
	Patios, decks at ground level not forming part of the structure – definition added in PS
	External car parking, equipment yards, cooling equipment and refuse areas - definition added in PS
	Other ground level areas that are not fully enclosed - definition added in PS
	Open light wells upper level voids of an atrium

Source: RICS[2]

IPMS 3 - Office: Net Internal Area (NIA)	
OFFICES ONLY	
INCLUDING	EXCLUDING
The common wall with adjacent occupier - the floor areas is taken to the centre line of the common wall, so the area includes half the width of the common wall - definition added in PS	
Enclosed walkways or passages between separate buildings – definition added in PS	
Areas occupied by the reveals of windows when measured and assessed as the internal dominant face	
External open sided balconies used exclusively – included but stated separately	
Accessible rooftop terraces included but stated separately	
	Open external stairways not being part of the structure e.g. open framework fire escapes
	Patios, decks at ground level not forming part of the structure – definition added in PS
	External car parking, equipment yards, cooling equipment and refuse areas - definition added in PS
	Other ground level areas that are not fully enclosed - definition added in PS
	Open light wells upper level voids of an atrium

ESTIMATING DATA

INTERNATIONAL COST MEASUREMENT STANDARDS (ICMS)

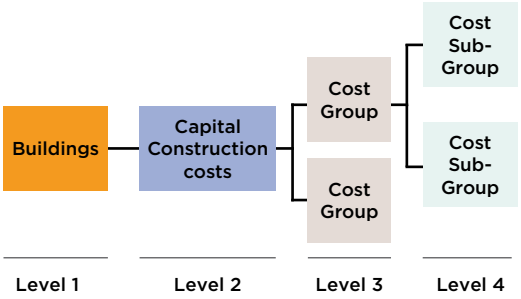
The aim of ICMS is to, "... provide a structure and format for classifying, defining, measuring, analysing and presenting construction costs that will provide consistency and transparency across international boundaries."[3]

WHAT IS IT AND WHY?

ICMS is a project backed by over 40 building and surveying national groups and professional bodies globally, working as the ICMS Coalition.

ICMS has been designed to be back-to-back with International Property Measurement Standards (IPMS), but addresses the cost aspects of projects.

The ICMS costs structure has been arranged in a hierarchy of Levels 1 to 4:



- **Level 1:** Project or Sub-Project – mandatory, classification by essence and principal purpose
- **Level 2:** Cost Category – mandatory, to permit high level comparison between projects
- **Level 3:** Cost Group – mandatory, equivalent of NRM's Group Elemental
- **Level 4:** Cost Sub-Group – non-mandatory, but subject to Level 3 constraints

Table 1: Example – ICMS Layout

Cost Code	Description
	Cost Category (Level 2)
	Cost Group (Level 3)
	Cost Sub-Group (Level 4)
1	Capital Construction Costs
1.02	Substructure
1.02.020	Foundations up to top of lowest floor slabs: **010** - excavation and disposal 020 - lateral supports 030 - raft footings, pile caps, column bases, wall footings, strap beams, tie beams 040 - substructure walls and columns 050 - lowest floor slabs and beams (excluding basement bottom slabs) 060 - lift pits

To this point in our analysis, the user has not been exposed to anything that is fundamentally different from a standard approach to costing projects. However, Level 3 goes on to change that.

Level 3 of ICMS introduces the concept of structure work separated from architectural works / non-structural works, as shown below:

Table 2

1.03	Structure
1.04	Architectural works | Non-structural works

The user must accord with the Level 3 ICMS headings, and so must break out some parts of NRM's Structural elements and measure these parts as non-structural. For example, what has been formerly understood as the Roof Element under NRM, will under ICMS have a structural component (roof structure) and a non-

structural component (roof covering and drainage).

Whilst there is no definition of the suggested ICMS Cost Sub-Groups provided, they are stated within the ICMS document as being broadly compatible with ISO 12006.

Readers of the ICMS document should also note that there exists in the suggested Level 4 structure, an additional level that is effectively Level 5 (refer e.g. 1.02.020.010 emphasised in table 1). This is something of a mix between what we currently know as NRM Element and NRM Sub-element level.

Another key feature of ICMS is the requirement for cost reporting to be provided using both IPMS 1 and IPMS 2 areas measurement formats. The IPMS 1 method measures to the external face of the external walls of buildings, whereas IPMS 2 measures to the internal face. While IPMS 2 is broadly equivalent to Gross Internal Floor Area (GIFA), ICMS also introduces the concept of Internal Dominant Face (IDF). IDF is defined as the inside finished face of that part of a wall that composes greater than 50% of the wall face. The use of IDF could, in extreme circumstances, result in the measured area exceeding the physical floor area of the space in question.

The use of IPMS 1 and 2 raises other issues as regards measurement of areas such as balconies and roof-top terraces. ICMS requires these areas to be measured, included and stated separately, whereas currently GIFA under NRM excludes both balconies and terraces.

As a consequence of the above, care needs to be taken in considering Benchmarked costs under NRM as against under ICMS.

RLB will work closely with clients as ICMS begins to permeate the construction industry around the world.

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RIBA OUTLINE PLAN OF WORK

RIBA (Royal Institute of British Architects) Work stages are the stages in which the process of designing building projects and administering building contracts are usually divided.

The RIBA Outline Plan of Work summarises the deliverables required under each RIBA work stage, setting out a logical structure for building projects. The procedures identify the responsibilities of the design team at each stage of design and contract administration.

In 2013, the RIBA undertook a comprehensive review of the RIBA Plan of Work 2007.

The review helped ensure alignment with best practice from all specialists within the integrated construction team, and provided a new framework which helps "to deliver better capital and operational efficiencies, carbon reductions and better briefing and outcomes." (RIBA)[4]

The 2013 Plan targeted several key issues that had arisen since the last review. These included:

- Integrating sustainable design
- Mapping BIM processes
- Providing flexibility around planning procedures
- Addressing changes in the way building services design is delivered
- Responding to the recommendations of the UK Government Construction Strategy
- Providing straightforward mapping and flexibility for all forms of procurement.

RIBA Plan of Work 2013

The RIBA Plan of Work 2013 organises the process of briefing, designing, constructing, maintaining, operating and using building projects into eight Work Stages (RIBA).

RIBA Plan of Work - Core Objectives	
0 Strategic Definition	Identify client's Business Case and Strategic Brief and other core project requirements.
1 Preparation and Brief	Develop Project Objectives, including Quality Objectives and Project Outcomes, Sustainability Aspirations, Project Budget, other parameters or constraints and develop Initial Project Brief. Undertake Feasibility Studies and review of Site Information.
2 Concept Design	Prepare Concept Design, including outline proposals for structural design, building services systems, outline specifications and preliminary Cost Information along with relevant Project Strategies in accordance with Design Programme. Agree alterations to brief and issue Final Project Brief.
3 Developed Design	Prepare Developed Design, including coordinated and updated proposals for structural design, building services systems, outline specifications, Cost Information and Project Strategies in accordance with Design Programme.
4 Technical Design	Prepare Technical Design, in accordance with Design Responsibility Matrix and Project Strategies to include all architectural, structural and building services information, specialist subcontractor design and specifications, in accordance with Design Programme.
5 Construction	Offsite manufacturing and on-site Construction in accordance with Construction Programme and resolution of Design Queries from site as they arise.
6 Handover and Close Out	Handover of building and conclusion of Building Contract.
7 In Use	Undertake In Use services in accordance with Schedule of Services.

OJEU PROCESS

The OJEU is the Official Journal of the European Union.

All contracts from the public sector which are valued above a certain financial threshold according to EU legislation must be published in the OJEU. The legislation covers organisations and projects that receive public money, and includes organisations such as Local Authorities, NHS Trusts, MOD, Central Government Departments and Educational Establishments.

THRESHOLDS

European Directives and UK Regulations set out detailed procedures for contracts where the value equals or exceeds various financial thresholds. These thresholds are set in Euros, and every two years the European Commission publishes the equivalent values in pound sterling.

The current financial thresholds are shown below - these apply from 1 January 2018 until 31 December 2019.

	Supply, Services and Design Contracts	Works Contracts	Social and other specific services
Central Government	£118,133 €144,000	£4,551,413 €5,548,000	£615,278 €750,000
Other contracting authorities	£181,302 €221,000	£4,551,413 €5,548,000	£615,278 €750,000
Small Lots	£65,630 €80,000	£820,370 €1,000,000	n/a
Different Thresholds / Exempt	▪ Social and other specific services (subject to the light touch regime) Article 74. ▪ Subsidised services contracts specified under Article 13. ▪ Research and development services under Article 14 (specified CPV codes are exempt).	▪ With the exception of subsidised works contracts specified under Article 13.	▪ Services are listed in Annex XIV of Article 74 of Directive 2014/24/EU

**Schedule 1 of the Public Contracts Regulations lists the Central Government Bodies subject to the WTO GPA (World Trade Organisation - Government Procurement Agreement).*[5]

Note: The calculation of the estimate value of a procurement shall be based on the total amount payable, before VAT is added (net of VAT), as estimated by the contracting authority, including any form of option and any renewals of the contract.

	Supply, Services and Design Contracts	Works Contracts	Social and other specific services
Utility authorities	£363,424 €443,000	£4,551,413 €5,548,000	£820,370 €1,000,000
Defence and Security authorities	£363,424 €443,000	£4,551,413 €5,548,000	N/A

POINTS OF CLARIFICATION

Concession Contracts - Concession Contracts are covered in EU Law under a separate directive and therefore separate regulations in the UK. Thresholds are £4,551,413 from 1 January 2018.

Contracts Subsidised by Public Funds - All applicable contracts which are subsidised by 50% or more of public funds must be advertised in the OJEU, however, any recipient of public funding on a project should verify with the funding body what is expected of them in procuring for the project.

GUIDE TO THE REGULATIONS

The Public Contract Regulations 2015 came into effect on 26 February 2015.

There are five types of contract award procedure:

- Open (Regulation 27)
- Restricted (Regulation 28)
- Competitive with Negotiation (Regulation 29)
- Competitive Dialogue (Regulation 30)
- Innovation Partnership (Regulation 31)

OJEU PROCESS

There are no restrictions on the use of the open and restricted procedures. However, the competitive dialogue, competitive with negotiation and innovation partnership procedures can only be used in certain circumstances.

CHOOSING A PROCEDURE

Open

- This is suitable for straightforward procurements where requirements are clearly defined
- There is no pre-qualification of bidders so anyone can submit a tender

Restricted

- This is a two stage procedure used to pre-qualify bidders based on financial standing and technical/ professional capability
- This will narrow the number of bidders who can submit a tender

Competitive dialogue and competitive with negotiation

Used for more complex procurements, where:

- Needs cannot be met without adaptation of readily available solutions;
- Requirements include design or innovative solutions;
- The contract cannot be awarded without prior negotiation;
- The technical specifications cannot be established with sufficient precision;
- Open/restricted procedure procurement has been run but only irregular or unacceptable tenders were submitted

Innovation Partnership

- Allows for the R&D and purchase within the same procurement process

CONSTRUCTION INSIGHTS

MINIMUM TIMESCALES

The table below sets out the minimum permitted timescales. Consideration must also be given to the general rules around setting of time limits that are set out at Regulation 47 of the Public Contracts Regulations 2015.

Choice of procedure and stage	Standard timescales
OPEN	
Despatch of contract notice to receipt of responses	35 days
Standstill	10 days
RESTRICTED	
Despatch of contract notice to receipt of responses	30 days
ITT to receipt of bids	30 days
Standstill	10 days
COMPETITIVE WITH NEGOTIATION	
Despatch of contract notice to expressions of interest	30 days
ITN to receipt of initial tenders	30 days
Standstill	10 days
COMPETITIVE DIALOGUE	
Despatch of contract notice to expressions of interest	30 days
Standstill	10 days
INNOVATION PARTNERSHIP	
Despatch of contract notice to expressions of interest	30 days
Standstill	10 days

FRAMEWORKS

RLB is appointed to a comprehensive suite of frameworks offering bespoke solutions for the public and private sectors. From briefing and feasibility through to soft landings and operation, we offer services across the full property cycle.

We recognise that access to the market is only part of the answer to providing best value, so in the public sector, we use these National Frameworks to develop best practice and innovation as well as consistent delivery of our service:

Crown Commercial Service

Department for Education

Ministry of Justice

reallies Procurement with Purpose

Bloom* *Opening up procurement

YORconsult

South West Consultancy Framework

NHS Shared Business Services

For public sector customers, the key benefits of using these frameworks are:

- Access to specialist services or integrated solutions tailored to customer needs
- Fully compliant with procurement regulations providing certainty and control for customers
- Speed to market and ease of appointment, removing the need for customers to initiate lengthy procurement exercises
- Ability to make direct appointments for independent consultancy advice whilst achieving best value outcomes
- Capacity and capability to deliver consistently across the UK
- Maximising value including social benefits
- Maximum commercial value

- Fully compliant with procurement regulations, providing certainty and control for customers
- Maximise value and deliver cost, quality, time and community benefits

Over the coming years, many of the challenges and opportunities facing government departments and local authorities, will be set in the context of devolution, industrial strategy, sustainable solutions, social enterprise and business productivity. All of these benefit from procurement partnerships which outlast a project – suppliers can build an understanding of customer needs and deliver them against medium and long-term aspirations.

The much-needed regeneration of our town and city centres, as well as the resolution of an affordable housing shortage are just two fundamental areas which will be delivered through partnerships between the public and private sectors. This means a clear understanding of the benefits of these frameworks, and a long term view as to how to achieve those benefits, will differentiate RLB and those customers who seek to achieve sustainable value.

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SOCIAL VALUE

The Public Services (Social Value) Act 2012 requires publicly funded bodies to consider how procurement can improve the social, economic and environmental well-being of an area, and how this improvement will be delivered. Although the Social Value Act does not extend to the procurement of construction, publicly funded bodies are required by HM Treasury to consider the "Triple Bottom Line". That is the economic, social and environmental impact of projects, and many private sector clients have Social Value high on their Corporate Social Responsibility agenda.

At the same time publicly-funded procurement must comply with the EU Public Procurement Directive (or its post-Brexit equivalent) with contracts awarded to the Most Economically Advantageous Tender (MEAT). With the emphasis on "economic" this appears to be contradictory, but there is now a significant body of evidence to demonstrate that Social Value can be measured in economic terms and its inclusion does not compromise the OJEU process.

In Great Britain £25bn was spent on public sector construction projects in 2017. Social Value research suggests that a Social Value equivalent to 20% of construction cost can be generated where projects are commissioned with Social Value in mind – so the public sector alone could generate community benefits of over £5bn per year[6].

Increasingly, customers want to consider their construction activities holistically but the challenge for customers and their advisors is to establish a procurement framework or tender which is relevant, clear, consistent, transparent and most importantly demonstrates the relationship between cost and value.

RLB UK has been working on this cost-value challenge and has developed a value model, which quantifies both the cost and value of different elements of the project, including Social Value, which we utilise with both our public and private sector clients.

For RLB, Social Value is defined by understanding the social, economic and environmental impact including evidencing the value this creates for people, communities, businesses and economies. We are working with Social Profit Calculator[7] to help our clients create robust, accountable and auditable Social Value calculations.

This means we can establish Social Value requirements and provide a monetary assessment of these requirements in order to set a benchmark for prospective contracting organisations to be monitored against, either on a framework or procurement of individual projects.

Our approach is to ensure that Social Value principles are integrated within each project, so that the benefits outlive the contract.

Find out more

Procuring for Value: Produced by the Construction Leadership Council (CLC) in collaboration with RLB and available to download on RLB.com. This report provides recommendations on how government, clients and the industry can maximise the impact of the sector deal by a change in approach to procurement.

Social Value: Find out more about our approach to Social Value, available to download on RLB.com

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PROCUREMENT OPTIONS

Selecting the correct procurement route for a project is fundamental to its success, and will affect its cost, programme, quality and team relationships for the lifespan of the project. Procurement strategy should be considered fully at the earliest opportunity and consideration should be given to the hierarchy of client and project requirements.

RLB can advise on an appropriate route to best meet these requirements, and we have highlighted some of the main features of the more common routes available on the following pages.

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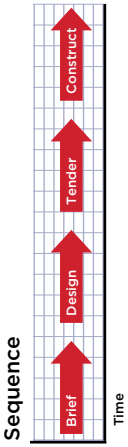
KEY

Contractual Line ——

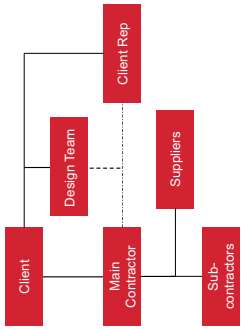
Communication Line – · – · –

Advantages
- Competitive fairness – all tenders like for like
- Cost certainty at outset of contract
- Established / tried and tested
- Minor changes can be implemented
- Established method of valuation
- Capable of conversion to a Guaranteed Maximum Price (GMP)
- Contractor designed elements can be accommodated

Concerns / Considerations
- Time required to complete full design prior to tender
- Full design not always achievable - e.g. specialist areas subject to contractor design
- Client takes time and cost risk for changes in design
- Client takes design risk
- Contractual / adversarial approach

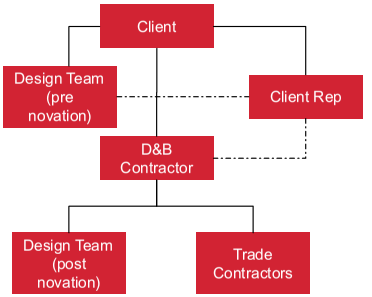


TRADITIONAL LUMP SUM



Key Features
- Design complete prior to tender
- Contractor takes price and time risk for works as tendered
- Client controls design
- Two stage / negotiation can be accommodated as an alternative

DESIGN & BUILD

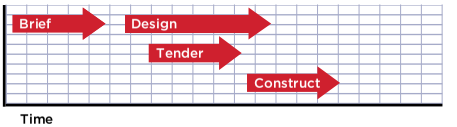


Advantages
- Single point responsibility
- Transfer of speculative risks to the Contractor
- Earlier start on site – design can run in parallel (subject to level of design used for tendering)
- Cost certainty at outset
- Programme responsibility with D&B Contractor (subject to post contract Client driven change)
- Possible to achieve a Guaranteed Maximum Price (GMP)
- Tried and tested
- Original design team can be novated for continuity / security of design

Concerns / Considerations
- Longer procurement and overall development process (compared to CM/MC)
- Higher tendering costs for contractors – can influence and limit the extent of 'competitiveness' of bids
- D&B Contractor prices design risk
- Client loses influence over design control – Employer's Requirements need to be precise, clear and detailed
- Quality of design and end product needs to be closely monitored
- Novation arrangements can create a conflict of interest
- Post contract changes can be more expensive than traditional contracts with bills of quantities
- More inflexible route to accommodate change

Key Features
- Tender (Employer's Requirements) normally based on outline design but can be at scheme design stage
- D&B Contractor makes proposals and adopts (and completes) the design
- Tender price can be single action or negotiated (usually through two stage)

Sequence



TWO STAGE

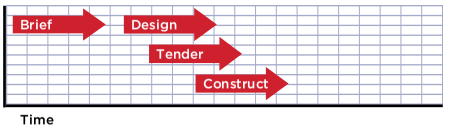
Used with Traditional or Design & Build Procurement

Key Features
- 1st Stage tender awarded prior to design completion (normally based on prelims, OH+P, approx quants & prov sums) & programme
- 2nd stage typically by negotiation and relies on the competitive tendering of work packages
- Pre-construction agreement required with Main Contractor

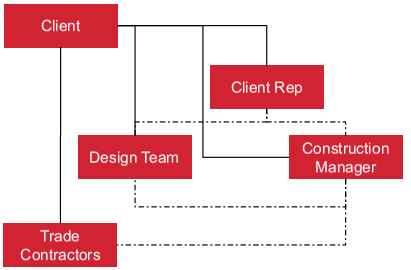
Advantages
- Enables quicker start
- Main contractor can be engaged earlier to advise on 'buildability', sequencing & sub-contractor selection
- Encourages a more collaborative approach
- Greater client involvement in the pre-selection and appointment of sub-contractors
- Ability to transfer greater degree of design risk to the contractor

Concerns / Considerations
- Potential 'abuse' of negotiating position during 2nd stage – question mark over obtaining the best price
- Potential for cost shock at end of 2nd Stage – particularly on large and complex schemes
- Scope change and design creep must be avoided / minimised to secure a realistic and achievable lump sum contract
- Loss of Client Design Control

Sequence



CONSTRUCTION MANAGEMENT

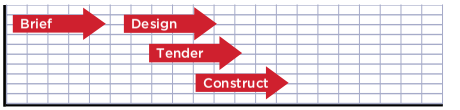


Key Features
- Construction Manager engaged on a management fee and paid costs for site supervision / site preliminaries
- Trade contracts direct with client
- Pre-construction agreement required for pre-construction input

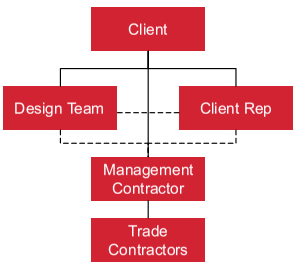
Advantages
- Quick method of procurement - allows early start with design and construction overlapping
- Construction Manager is client facing – collaborative approach
- Early advice for design, programming and buildability
- Finishes / fit-out can be designed later in process with less scope for change
- Programme (including design) & cost plan agreed with client and Design Team before work starts
- Client retains control over design
- Direct client relationship with Trade Contractors – can improve performance

Concerns / Considerations
- Client takes programme and cost risk
- Lack of cost certainty for Client
- Contract and payment administration of direct orders between Client and Trade Contractors
- Potential 'post box' scenario
- Requires higher degree of Client involvement
- No single point of responsibility

Sequence



MANAGEMENT CONTRACTING

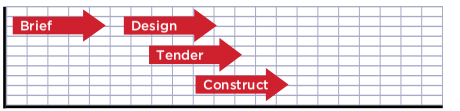


Key Features
- Management Contractor (MC) appointed on a fixed management fee (usually a % of prime cost) plus supervision / prelim costs (these can be fixed)
- Single contract between Client and MC with Trade Contractors contracted to MC
- Project prime cost estimated and updated as design proceeds and works packages are let

Advantages
- Quick method of procurement - allows early start with design and construction overlapping
- Early advice for design, programming and buildability
- Finishes / fit-out can be designed later in process with less scope for change
- Programme (including design) & cost plan agreed with Client and Design Team before work starts
- Client retains control over design
- Contractual (and payment) line between Client and MC creates more programme / performance ownership
- Simpler / fewer contractual lines

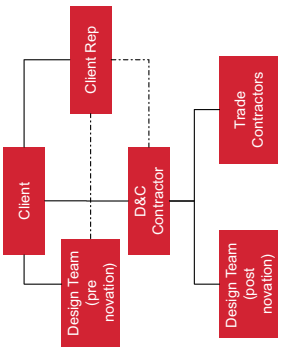
Concerns / Considerations
- Client takes programme and cost risk
- Lack of cost certainty for Client
- Potential 'post box' scenario
- Requires higher degree of Client involvement
- No single point of responsibility
- Not as much supply chain interface and transparency

Sequence



PROCUREMENT OPTIONS

DEVELOP & CONSTRUCT

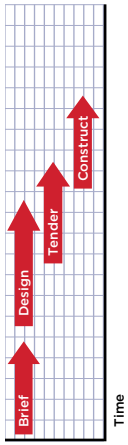


Key Features
- Main Contractor (MC) appointed early (at RIBA Stages 2 - 3)
- Design Team novated to MC before fixed price is agreed
- Target cost contract (e.g. NEC3) typically adopted
- Initial appointment made on quality based assessment plus OH+P / prelims – Pre-construction agreement required

Advantages
- Integration of design and construction through collaborative approach
- Overlapping of design and procurement without the risk of un-priced design development
- Quicker overall process
- Progressive co-ordination of design with the early integration of specialist contractors

Concerns / Considerations
- Less cost certainty than traditional / D&B procurement routes
- Good option in rising market – potentially not offering best price in a falling market
- Target cost and programme subject to change if they are not 'robust'
- Setting the target cost at the right level
- Requires a collaborative approach from the whole team
- Target cost contracts (NEC3) require extensive administration
- Loss of design control- design needs to be developed to an appropriate level that is acceptable to the client
- Pre-selection of the 'right' contractor is key

Sequence



PROJECT BANK ACCOUNTS

Poor payment practices and contractor insolvency remain common problems in the UK construction industry. The collapse of major contracting and sub-contracting organisations continues to arise on too regular a basis, with the accompanying adverse downstream and supply chain effects.

However, it remains RLB's position that both the occurrences and the effects can be mitigated by the use of Project Bank Accounts and that their wider use would assist in alleviating the problem.

WHAT IS A PROJECT BANK ACCOUNT

A Project Bank Account (PBA) is a 'Fair Payment' mechanism which ensures the contractor and supply chain receives prompt payment of monies rightfully due through certified interim payments. The PBA is the medium through which payments are made. It is not a contractor's account; it is set up jointly by the client and contractor and is linked to a Trust Deed, which provides insolvency protection for the whole supply chain.

In the event of contractor insolvency the client has the financial security of knowing that the money they paid out on their project has gone directly to the companies working on the project, and the subcontractors know that their payments are protected.

Current government best practice demands that Project Bank Accounts should be used on public sector construction contracts, unless there are "compelling reasons" not to.

RLB is expert in the field of project banking and:

- Was instrumental in developing the PBA model and has now operated them for more than 15 years
- A PBA was first used by RLB in 2001 on the Andover North Site project for Defence Estates
- Was appointed by OGC to support the development of the "Guide to Best 'Fair Payment' Practices"
- Acted as advisors to Barclays and Bank of Scotland in the development of their PBA products
- Has worked with the authors of NEC3, PPC2000 and JCT to develop PBA supplements
- Now advises clients in all sectors on the adoption and use of Project Bank Accounts for their projects or work programmes

CONTRACTS: UNDERSTANDING THE DIFFERENCES BETWEEN NEC3 AND NEC4

In June 2017, NEC launched the NEC4 suite of contracts as a direct result of feedback from the industry. The NEC4 User Guide states "It was to be evolution, not revolution".

The NEC stated that in drafting NEC4 they were aiming to provide greater stimulus to good management, support new approaches to procurement to improve contract management and inspire increased use of NEC in new markets and sectors.

Apart from some terminology changes from the Employer to "Client", Works Information to "Scope" and Risk Register to "Early Warning Register", key changes include:

- Contractors to submit payment applications rather than for the Project Manager to assess if they don't
- New compensation event added for cost of preparing a proposed quotation that does not go ahead
- Provision of incorporation of additional compensation events being included within the contract data without the need for Z clauses.
- Now a "deemed acceptance" of the programme if the Project Manager fails to respond
- Requirement to show "implemented compensation events" removed from revised programmes
- Option C/D/E/F cost based contracts allow Contractor to instigate a review of Defined Cost in an attempt to encourage agreement of Defined Cost and importantly Disallowed Costs as works proceed rather than at end of contract
- Introduction of "Contractor's Proposals" for the Contractor to propose change to scope or to achieve acceleration, which the Client can accept or not and share benefits accordingly

CONSTRUCTION INSIGHTS

The NEC has also introduced two new contracts into its suite of contracts:

- Design Build and Operate (DBO) Contract – The DBO combines the functions of design, construction, operation and/or maintenance to enable it to be procured from a single supplier and allows for a range of different services to be provided before, during and after engineering and construction works are completed (including facilities management services)
- Alliance Contract (ALC) – This contract is for Clients who wish to enter into a single contract with a number of participants in order to deliver a project or programme of work. The focus of the contract is on collaborative working, encouraging all parties to work together in achieving Client objectives and share in the risks and benefits of doing so. The ALC is different from other contracts in the NEC suite as it is a multi-party contract.

The purpose of the NEC4 continues the theme of stimulus to good management and further reinforces the need for the parties to take a pro-active approach to project delivery. Project Managers must be well versed with the contract, as to administer without full knowledge will put project delivery, the Client and themselves at risk.

Reference[8]

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THE HACKITT REVIEW - REGULATIONS POST GRENFELL

Following the tragic fire at Grenfell Tower in London, Dame Judith Hackitt, former Chair of HSE, was commissioned to lead a review.

The task was to make recommendations which deliver a robust regulatory system and which give residents the assurance that buildings are safe to live in. The review examined building and fire safety regulations and related compliance and enforcement, focusing on high rise residential buildings. There are three key findings:

- Cultural issue - 'A race to the bottom' has led to corner cutting and compliance failure
- Regulatory system - not fit for purpose for complex and high-rise buildings
- Regulations and guidance - ambiguous and inconsistent

The final report made 53 recommendations covering:

- A new regulatory framework on Higher Risk Residential Buildings
- Defined Responsibilities for duty holders in design/ construction/occupation
- Creation of a Joint Competent Authority to oversee fire safety
- A 'system' approach to design, construction and maintenance
- A golden thread of information to run through from design to occupation
- Stronger resident voice
- Improved levels of competence
- Greater industry ownership of guidance
- A more robust and transparent construction products regime

CONSTRUCTION INSIGHTS

The Government has considered the recommendations and is implementing changes:

- Banning the use of combustible materials in external walls
- Strictly limiting assessments in lieu of tests for the certification of building materials
- Consultation on a clarified version of Approved Document B (Building regulation in England - fire safety matters within and around buildings)
- Consultation on a technical review of Approved Document B
- Confirming publication of a new Building Regulations Manual

We can expect much more regulation and guidance over the next 12 months, including tighter definition of competence for designers and installers, and greater responsibility for building performance to be placed on duty holders.

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BUILDING INFORMATION MODELLING (BIM)

BIM is a collaborative process based around a digital model of the building. BIM is not software, nor is it simply a 3D model of a building - the fundamental difference being that the BIM file contains "information" which provides a co-ordinated single source of truth for use by all stakeholders. The "I" in BIM, therefore, is the key element.

The BIM process is used to create, manage and share information on a project throughout its life-cycle. It can be used to design, construct and operate buildings in a common environment, with the same information being used by all parties. Designing in a BIM environment involves assembling objects to form the digital model. Each object has information embedded/attributed to it e.g. a door (the object) has its weight, colour, size etc. (the attributes) embedded within the object.

The information attributed to the objects can be accessed and re-used by other parties, which provides a coordinated single source of truth for use by all stakeholders. This facilitates collaboration, greater efficiency, data consistency and co-ordination of the model in a virtual environment. Examples of information attributed to objects include:

- Visual data
- Dimensional and geometric data
- Functional data
- Performance data
- Specification data
- Cost data
- Construction programme data

The information contained within a BIM file is described in a number of ways; typically by the type of data and level of detail. Commonly used terms to describe this information include BIM Maturity Levels, Level of Detail or Development and BIM Dimensions.

BIM MATURITY LEVELS

In the UK BIM Maturity Levels are a measure of the ability of the construction supply chain to operate and exchange information. There is some debate over the exact meaning of each level; however, levels are generally defined as:

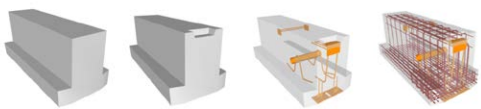
- Level 0 – 2D CAD with paper or electronic distribution, no collaboration
- Level 1 – Typically a mixture of 3D CAD for concept work, and 2D for drafting of statutory approval documentation and Production Information. Common models are not shared between project team members.
- Level 2 – This is distinguished by collaborative working – all parties produce their own BIM files independently. Information is exchanged between different parties through a common file format, which enables any organisation to be able to combine that data with their own in order to make a federated (combined) BIM file. The federated BIM file is then interrogated and any changes required are undertaken independently. This process is repeated at several pre-defined stages of the project until the model is complete.
- Level 3 - This represents full collaboration between all disciplines by means of using a single, shared project model which is held in a centralized repository. All parties can access and modify the same model, and the benefit is that it removes the final layer of risk for conflicting information. This is known as 'Open BIM'.

Please refer to A Report for the Government Construction Client Group, Building Information Modelling (BIM) Working Party Strategy Paper, March 2011[9]

LEVEL OF DEVELOPMENT

The Level of Development (LOD) Specification released by the BIM Forum (bimforum.org) is a useful reference that enables users to specify and describe both the content and the reliability of the objects in the BIM file. An important and useful aspect of the specification is the distinction between the content and the reliability of the information, or what it can be relied on for.

Please see 2015 Level of Development Specification to find out more[10]



LOD 200 LOD 300 LOD 350 LOD 400

BUILDING INFORMATION MODELLING (BIM)

BIM DIMENSIONS

There is some debate as to the exact content of each dimension, but the definitions below are generally accepted with each additional dimension adding more information to the BIM file.

3D – Design
Three Dimensional representation of the building, with basic attributes included

4D – Programme & Scheduling
3D BIM with the addition of Time and Programme/ Scheduling information

5D – Cost Estimating
4D BIM with the addition of Cost information

6D – Operation / Maintenance
5D BIM with the addition of Sustainability, Operational and Energy information

RLB AND BIM

RLB has been working successfully in the BIM environment since 2010 on hundreds of projects ranging from small new buildings to large complex buildings around the globe, with some of the world's leading designers. We are confident that we are at the forefront of our respective fields when engaged on projects in a BIM environment.

RLB has invested in BIM development including:

- Forming a Global BIM Committee committed to developing and disseminating best practice from our offices around the world
- Developing our own in-house software to measure and/or extract data directly from a BIM file
- Using design software to further interrogate and understand the basis and composition of the model, allowing us to re-use data and query data
- Developing our own BIM Protocols, ensuring consistency of approach, training and best practice

RLB's **BIM Guidance Protocol**, a guide for clients and designers, is available to download now from RLB.com.

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GOVERNMENT SOFT LANDINGS

RLB is delivering numerous projects utilising Government Soft Landings (GSL).

GSL's aim is "to champion better outcomes for our built assets during the design and construction stages through GSL powered by BIM to ensure that value is achieved in the operational life-cycle of an asset".[11]

A GSL approach saves time and money, delivers higher quality building operations and ensures that whole life costs have been considered from the onset of the design process. By understanding the customer's needs at the commencement of a project, better outcomes are achieved for the eventual user and operator of the building.

RLB's experience in GSL includes:

- Guidance on GSL processes and systems
- Strategic consultancy advice on operational outcomes
- Project Management and delivery
- Collaborative approach to stakeholder management
- Strong low carbon and sustainability capability

MODULAR CONSTRUCTION

Modular construction is nothing new. From the post war era of the low cost, quick housing fix to the luxury of Huf Haus, modular has always had its place in the world of design and build.

Recently, however, we have seen a huge increase in customers looking at modular build as an effective modern, construction solution, and RLB is committed to increasing our influence in this area. Sources estimate a 6% increase globally in modular in the next three years[12]. The trend is backed by the UK government which has pledged £2bn to offsite manufacturing techniques in the public sector and a £3bn Home Building Fund as a way to meet its Construction 2025 strategy. So why is modular construction back in fashion?

1. Financial benefits

Offsite allows developers to plan and build according to a schedule that is not weather dependent. This means less hold-ups and unnecessary wasted days. Modular construction also involves lean manufacturing processes that increase efficiencies and remove last minute changes that can equal budget increases or overspends.

2. Smarter efficiency

Designed using BIM devices, scenarios can be played out on screen in minutes rather than days, ensuring that probability is taken out of the equation and accuracy more robust. The whole process can be a few weeks from design to fulfilment.

3. Environmental

Building offsite and utilising BIM helps efficiency and enables environmental standards such as BREEAM and SKA ratings to be built into the design, build and refit processes from day one.

4. Urban regeneration

Modular could also be the answer to our urban regeneration. Empty units in high streets, supermarket car parks and other underutilised urban space could be transformed by modular buildings.

5. The Scandi effect

Modular has been embraced globally, including Sweden where around 85%[13] of detached houses are built using pre-fabricated timber.

STRUCTURAL TIMBER

The structural timber industry is responding positively to the government announcement of the presumption in favour for offsite manufacture from 2019 for all publicly funded projects. The drive for offsite manufacture is forever increasing as the benefits are increasingly becoming known to all.

The timber industry is in a prime position to support and ultimately benefit from this announcement, with Structural Timber Association (STA) members at the forefront of research and development in the field. The industry continues to evolve and has adapted to the changing market demands. It has intelligent design for manufacture and assembly principles and provides excellent integrated offsite construction solutions with a single point responsibility for structural integrity to the market place.

With the increasing demands on sustainable construction, the timber industry is the only structural solution that can provide a truly balanced approach to commercial and environmental considerations.

Structural timber is already a favoured solution in many sectors such as medium rise hotels, student accommodation, education, self-builders, residential and others; all indications suggest that it will extend further in the future once the benefits are apparent to all.

RLB produced the first **Structural Timber Estimating Guide** in 2016, with the support of members from the STA. We have now produced an updated version for 2019 which aims to bring brief technical information and costs for structural timber to a greater audience and ensure that the "estimated costs" are readily available to people in the construction industry who are designing and calculating and preparing budgets.

Find out more and read the full report at RLB.com.

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CONSTRUCTION INSIGHTS

ESTATE RATIONALISATION

In the current economic climate, striving to deliver more with less is a key consideration. Estate Rationalisation can bring benefits to organisations with legacy land and property assets or expanding property requirements. A well-developed estates strategy can identify where efficiencies, income generators or capital receipts can be realised across the public and private sector.

Both the public and private sectors are under pressure from a variety of factors. The public sector is being driven by various government pressures, initiatives, reviews and reports. In the private sector, businesses must increase productivity through efficiency to maintain profit levels in an increasingly competitive global market. Whether delivering goods or services, the facilities should be matched to the process; as the highest quality workplaces will help retain and attract the best quality staff in the marketplace.

Furthermore, the side benefits of change to the workplace are quite often overlooked as a new working environment is a great opportunity to change inappropriate cultures or working practices.

There may be many potential blockages, ranging from a lack of funding through to a fear of failure. An in-house estates team may lack the skills and resource to deliver change and doing their day job means this never becomes a priority. Not knowing where to start and what a successful process looks like may add to the inertia. Investing in change today to realise savings over a longer period also adds to the mystery, meaning the urgent decisions overtake the important ones.

RLB has extensive experience in change management and estates strategies which can lead to estate rationalisation and transformation opportunities. We understand that no two scenarios will be the same and we have a suite of solutions and processes that can help to unlock these opportunities for our customers.

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COVENTRY VERY LIGHT RAILWAY
COVENTRY, UK

A research and development project, using the latest automotive expertise to deliver an innovative and affordable light rail system

FUND & PROJECT MONITORING

RLB provides tailored monitoring services to suit our client's specific requirements and project particulars.

Our clients include:

- Developers / funding institutions
- Tenants / purchasers
- Banks / development finance companies
- Investors / Grant funders / Private Finance Initiative (PFI) funders

OUR APPROACH TO MONITORING

Initial technical due diligence is delivered in the form of a comprehensive Initial Monitoring Report. This captures the status of all key development matters, establishes inadequacies against the project objectives, recommendations of mitigation actions and additional risk controls required to ensure a compliant development with acceptable levels of risk.

Throughout the project, progress reporting is delivered in the form of periodic Progress Reports produced in line with drawdown requests.

Our approach is tailored, depending on the client and the funding arrangement.

PROJECT & DEVELOPMENT MONITORING

Our objective is to identify risks and associated mitigation strategies at the outset and to monitor and advise on residual project risks during the course of a project.

Key development matters appraised include:

- Development and construction costs
- Programme
- Contractual matters
- Statutory matters
- Design and pre-construction matters
- Capability of the project team
- Risk management
- Health & Safety

We also assess the construction valuations to ensure all payments reflect the value of works completed, in addition to the verification of the legitimacy of all other costs incurred.

CONSTRUCTION INSIGHTS

FUND & BANK MONITORING

RLB's engagement starts in the form of initial technical due diligence prior to the agreement of funding and progress reporting throughout the construction phase.

Residual risks are continually appraised and full recommendations are provided to ensure that a funder's financial exposure does not exceed the value of securities held.

We help our clients make prudent real estate investment assessments and we work collaboratively with legal and valuation professionals to provide coordinated advice in search of the optimal outcome.

Importantly, we also assess the quality of the asset being developed by advising on whole life costing to safeguard long term value from the investment.

Historically, development financiers have experienced increased exposure to financial risk and, in specific cases, incurred financial loss due to an absence of comprehensive technical due diligence and progress reporting throughout a development lifecycle.

Our proactive, rather than reactive, approach provides an early warning system for our clients; helping to ensure better informed decision making by acting as the client's 'eyes and ears' during the development process.

Within the past 5 years, our Project Monitoring service has enabled our clients to:

- Deliver 4,000 residential units
- Create 25,000,000 ft^2 of commercial space
- Administer £12.4 billion of development funding

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SUSTAINABILITY

INTRODUCTION

Changes within the construction industry and government pressure have resulted in sustainability being placed higher on the agenda. Drivers for improving corporate sustainability are multiplying, with regulation being the primary motivating factor for the construction industry, but also the desire for operational efficiencies, improved reputation and wellbeing benefits.

The UK is legally bound to reduce Greenhouse Gas (GHG) emissions by 80% by 2050, with the construction sector having a target of reducing GHG emissions by 50% by 2025. Whilst the targets are ambitious, the construction industry has responded with the release of new sustainability standards, and innovative methods of improving industry performance.

Key sustainable building benefits include:

- Asset value: increased marketability, ability to command greater rental premiums and higher sale prices
- Operating costs: reduced costs (up to 30% lower) through reduced energy and water consumption, lower long-term operation and maintenance costs
- Wellbeing: sustainable buildings improve productivity and occupant health and wellbeing
- Risk mitigation: increasing legislation against inefficient buildings

Recognising the increasing awareness of the construction industry, our suite of Sustainability Services assists our customers in achieving sustainability and wellbeing improvements. Our service offering encompasses the whole estate life-cycle;

- SKA Ratings: Higher Education, Offices and Retail
- BREEAM New Construction
- Estate Rationalisation
- Life Cycle Costing
- Carbon Accounting
- Wellbeing Consultancy

Our approach to sustainability recognises the link between our customers' built assets, carbon emissions and corporate responsibility.

SUSTAINABILITY ACCREDITATIONS

There is a range of sustainability accreditations available across building types and sectors. Comparing accreditations can be complex for clients and project teams; in order to assist we have produced a guide to the most popular sustainability certifications. You can access our guide on RLB.com.

There are a wide range of accreditations. These include the more widely recognised awards such as BREEAM and LEED, as well as more bespoke ratings which are increasing in popularity, such as SKA, Well and Wired. The guide compares a wide range, covering sustainability targets from all areas of construction.

Other certificates include the Living Building Challenge, which takes a more holistic approach to sustainability, and more bespoke options such as SKA and WIRED, that are targeted at improvements across specific areas of building such as fit-out and IT upgrades. The following pages contain a comparative overview of these accreditations.

For a full overview of sustainability accreditations, in the UK and internationally, download RLB's **Accreditation guide**, available now on RLB.com.

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ACCREDITATIONS COMPARISON TABLE

	BREEAM	LEED	SKA RATING
OVERVIEW	Green rating system from design to operation for buildings, communities and infrastructure projects.	Green rating system from design to operation for buildings and communities.	Green rating system from design to operation for refurbishment and fit-out projects.
TYPE OF BUILDING	All building types, including new construction, refurbishment and occupied buildings.	All building types, including new construction, fit-out and occupied buildings.	Refurbishment and fit-out projects including commercial, retail, higher education. Excludes residential.
KEY BENEFITS	Secures planning approval by UK Local Authorities. Enhances market value and reduces operating costs. Reduces energy and water consumption, reduces waste production.	Benchmarks sustainability of buildings for US clients. Enhances market value and reduces operating costs. Reduces energy and water consumption, reduces waste production.	SKA Rating shows a commitment to sustainability. Simple online tool that can be used informally or by an assessor. Flexibility of assessment; avoids penalising for base build.

	BREEAM	LEED	SKA RATING
LOCATIONS	Global Founded by BRE.	Global Founded by USGBC.	Global Founded by RICS.
COST	Registration: £250 - £1,850 Certification: £505 - £3,000	Registration: £1,166* Fee: £3,886* *Members of USGBC receive discounts.	Registration: Free Certification: £495
DISTINCTIVE POINT	In the public sector having a BREEAM certificate can be a requirement for procurement strategies.	Great focus on materials and consideration on energy demands.	Organisations have the flexibility to select which measures to prioritise and be scored against.

Rider Levett Bucknall | Riders Digest - United Kingdom 2019

CONSTRUCTION INSIGHTS

	WELL BUILDING STANDARDS	LIVING BUILDING	WIRED
OVERVIEW	Framework to improve health and wellbeing for building occupants.	Green building certification programme based on performance over 12 month occupancy.	Digital connectivity and technology infrastructure certification system of commercial properties.
TYPE OF BUILDING	New and existing buildings, interiors, shell and core projects.	New and existing buildings, landscape and infrastructure projects.	Commercial projects from refurbishment to buildings under construction.
KEY BENEFITS	Prioritises health. Achieves increased end-user satisfaction and improves productivity. Attracts and retains employees and clients.	Allows net positive energy. Strong connections to nature for occupants. Reduced operational costs.	Identifies marketable connectivity features. Attracts tenants faster by ensuring access to the most cutting-edge technology.

Rider Levett Bucknall | Riders Digest - United Kingdom 2019

	WELL BUILDING STANDARDS	LIVING BUILDING	WIRED
LOCATIONS	Across 27 countries. Operated by the Well Building Institute.	Global. Operated by the international Living Future.	UK, France, Ireland, Germany and Canada. Founded by WiredScore.
COST	Registration: £1,175 - £7,833 Certification: Base of £3,113. £0.063-0.18 per ft^2	Registration: £704.74* Certification: £1,957 - £15,661* *Fees to be paid in USD	Registration: £500 Certification Occupied buildings £6,300-21,000 Certification Developments £9,900-£27,500.
DISTINCTIVE POINT	Supported by several years of scientific research and medical evidence.	The potential to sell energy or resources back to community.	Future proof of the property for tomorrow's technology, avoiding future retrofit costs.

CONSTRUCTION INSIGHTS

ENVIRONMENTAL LEGISLATION

RLB is able to advise our customers on current and relevant environmental and sustainability legislation.

25 YEAR ENVIRONMENT PLAN

The UK's 25 year environment plan sets out crucial goals for improving the environment and leaving it in a worthy state. The UK government is working with communities and businesses to tackle and improve key areas below:

- Clean air
- Clean and plentiful water
- Thriving plants and wildlife
- Mitigating and adapting to climate change
- Using resources from nature more sustainably
- Minimising waste
- Reducing risk from environmental hazards

ENERGY SAVINGS OPPORTUNITY SCHEME (ESOS)

ESOS has caused increased interest in organisational energy efficiency. Since the start of 2015, one third of investigated compliant companies had implemented or updated an action plan or strategy to achieve energy efficiency goals.

The 31 December 2018 was the qualification date for Phase 2 of the ESOS scheme. Organisations subject to ESOS Phase 1 will need to check whether they still meet the qualification criteria. Likewise, those who did not meet the qualification criteria for Phase 1 must assess if they now meet the criteria.

ESOS Phase 2 requires an organisation to:

- Measure their total energy consumption for a 12-month period
- Appoint an ESOS assessor to conduct audits to identify cost effective energy efficiency opportunities
- Report compliance to their national scheme administrator

STREAMLINED ENERGY AND CARBON REPORTING FRAMEWORK

Streamlined Energy and Carbon Reporting framework (SECR) has been developed by the UK government to replace the CRC Energy Efficiency Scheme with the intention to simplify carbon and energy reporting requirements. Significantly more organisations are required to report to the SECR, 12,000 businesses now have to comply with the legislation compared to 4,549 which reported previously to the CRC. Existing mandatory greenhouse gas (GHG) emission reporting requirements already apply to UK quoted companies, as well as the Energy Saving Opportunity Scheme (ESOS).

As well as simplifying reporting requirements, SECR is also intended to encourage the implementation of energy efficiency measures, and to align with G20 recommendations to facilitate a transition to a sustainable, low carbon economy. Companies which hit the criteria will need to include SECR criteria within annual reports from 1 April 2019.

RENEWABLE TECHNOLOGIES: APPLICATION AND COST DATA

Renewable technology	Candidate buildings	Pre-requisites	Potential barriers	Approximate Capital Cost	Payback Period
Tower mounted wind generators	A	F	Environmental impact Site space for large turbines Planning Approval	2-50kW output £2500 - £6000 per kW for schemes between 2 and 50 kW	For larger turbines the payback can be within 10 years (taking into account Feed in Tariffs)
Building mounted 'micro wind'	B	G	Feed in Tariffs do not always qualify for these units Planning Approval	£3500 - £5500 per kW of generator capacity may be achieved from small building-mounted turbines	Approximately 20 -25 years
Standard photovoltaic panels (poly and mono crystalline panels)	B	H	Available roof space	£1300 to £2750 per kWp	Between 8 and 12 years depending on size, location and usage profile
Building integrated photovoltaic panels (glass/glass laminated)	C	H	None	For varying ranges of materials £2000 - £3500 per kW Curved glass glazing unit range from £4000 - £6000 per kW	
Passive solar water heating	D	H	None	A typical residential 'evacuated tube collectors' system has a cost ranging from £750 to £1100/m^2	Over 25 years

CONSTRUCTION INSIGHTS

RENEWABLE TECHNOLOGIES: APPLICATION AND COST DATA

Renewable technology	Candidate buildings	Pre-requisites	Potential barriers	Approximate Capital Cost	Payback Period
Ground source heat pump	B	I	Ground condition survey required. Depends on open loop or closed loop system, and horizontal or vertical collectors Site space for horizontal connectors	Install costs range from £650 to £1800/kW depending on system type (horizontal/ vertical), its size and complexity	Over 20 years
Biomass CHP	E	J, K	Environmental impact Maintenance costs Grant funding for gas CHP	£2600 to £3700/kWe	4- 8 years

KEY

A Industrial distribution centres

B Most types of building

C Prestige offices and retail

D Residential and commercial, hotels and leisure

E Industrial, hotel, leisure, hospital

F Average site wind speed minimum 7m/s

G Average site wind speed minimum 3.5m/s

H Roughly south-facing, un shaded

I Feasible ground conditions

J Small uplift between input and output temperature – most efficient in autumn and spring

K Suitable use of heat during summer

ONE KING STREET (RLB'S MANCHESTER OFFICE)
MANCHESTER, UK
Achieved a SKA Offices Gold Rating

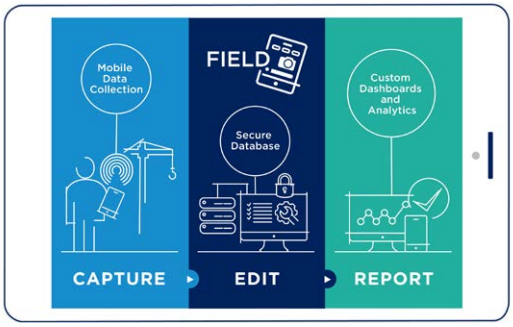
RLB FIELD

As technology continues to be a conduit of change, RLB continues to invest in tools and technology to enhance efficiencies and deliver projects with greater data certainty and transparency.

Field is our in-house tablet/mobile application that provides our surveyors and project managers with the ability to capture client data live on site via electronic forms.

Field focuses on three objectives:

- Enhance the productivity of users through the replacement of document production
- Provide a consistent method of data capture
- Capture accurate client data for future analysis

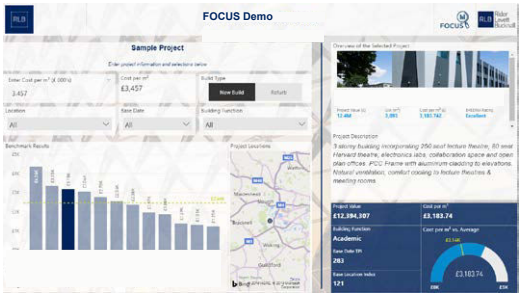


RLB FOCUS

The way we consume data is changing, and the construction industry is witnessing a more rapid rate of change than most. RLB is continuing to develop new ways of sharing and reporting on information, making data more accessible, more visual and more responsive.

Focus is our cloud-based reporting tool that combines data from multiple sources and presents the analysis as a series of simplified interactive dashboards. Focus provides:

- User interaction via responsive visuals so you can explore and interrogate your data
- Live reporting of data captured on site from RLB Field or other data sources
- Dashboard reporting
- Multi-level project & programme reporting



Example RLB Focus Dashboard

Please get in touch:

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CASTLE PARK VIEW
BRISTOL, UK
Bristol's tallest residential building

REGIONAL INSIGHTS

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100 Manchester & Liverpool
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102 Yorkshire & Humber

INTRODUCTION

We pride ourselves on our approach to delivering flawlessly, demonstrated through long-standing client relationships. Our teams are proud chartered professionals either RICS, CIOB or APM and are actively participating in forums such as RICS, BCO or CBI, to ensure we're ready to address the challenges we're facing in today's construction sector.

Our people monitor their respective markets continually throughout the year, and report on ongoing and forecast upcoming tender price movements. These insights are brought together in our quarterly Tender Price Forecast (TPF) documents, which provide a snapshot of markets' performance around the country.

Forecast tender price uplifts shown here reflect our Q1 2019 TPF figures, but are subject to review as the year progresses.

BIRMINGHAM

The Commonwealth Games in Birmingham and Coventry's appointment as City of Culture are two key opportunities that exist in the region, which along with the large-scale infrastructure projects that are already underway, such as HS2 and the M6 improvement works, reinforce confidence in the area.

RLB continues to work across multiple sectors delivering large and complex projects pre and post contract. Our teams are actively contributing to making a lasting impact to the local community, working on a number of innovative education and healthcare schemes such as the School of Architecture and the Built Environment at the University of Wolverhampton and Birmingham Women's and Children's Hospital, as well as working with national and local house builders.

TENDER PRICE FORECAST

REPORTED	2019	2020
Q1 2019	**+2.25%**	**+3.25%**

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BRISTOL

As one of the UK's Core Cities, which is predicting growth in construction output at 2% for the next 3 years[14], above the UK average of 1.3%, there is increased interest and confidence among investors in all sectors within the city.

The office sector demand by both occupier and investment continues to grow and the lack of supply has led to increase in rents. Residential opportunities remain buoyant with Build to Rent schemes underway within the city including some taller buildings within the city centre. Infrastructure will be a key sector in the next few years with investment from the West of England Combined Authority in transport.

RLB works across all sectors within the region and can advise from early development appraisal stage to whole life costing. The team works on projects of all sizes, complexity and duration within our regional market.

TENDER PRICE FORECAST

REPORTED	2019	2020
Q1 2019	**+3.00%**	**+3.00%**

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Bristol

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LONDON

London remains a key market for RLB as we continue to see steady growth across all sectors with an increased market share and the successful delivery of a number of high profile projects across a variety of sectors. This consistent pipeline of activity has enabled us to achieve healthy growth; and we have doubled the size of our London Head Office team.

The levels of opportunity for commercial redevelopment and refurbishment in central London remain high and there has been an increase in interest from overseas investors in commercial offices, who may have only previously considered residential investment.

The for-sale residential sector remains stable, whereas rented house, student accommodation and hotels are all growing sectors. Investors tend to diversify and BTR (build to rent) as part of the PRS (private rented sector) is continuing to gain market share. London is our centre of excellence for the data centre sector, with an expert team of professionals who have served 210 data centre projects internationally.

RLB collaborates with leading industry organisations and aims to drive improvement and move the industry on to the next level. Some of the organisations we work with include the British Council of Offices, and New London Architecture.

TENDER PRICE FORECAST

REPORTED	2019	2020
Q1 2019	**+1.00%**	**+1.50%**

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MANCHESTER & LIVERPOOL

Manchester continues to attract significant investment in and around the City Centre. With its construction market predicted to grow by 15% in 2019 and residential new build forecast to reach 150,000 units over the next 10 years, Manchester is considered one of the most active cities in the world.

Major new office developments in Manchester will centre around St Johns, NOMA and Salford Central. The University sector in the region is due to add a further £2bn over the next 5 years and there is an anticipated double digit rise in annual growth in the warehousing sector over the next two years. RLB is delivering projects across all sectors in the region and across all services.

As active members of the Chamber of Commerce in both Manchester and Liverpool, City Co. (Manchester), Pro Manchester, Marketing Manchester and Panel Members for the Regional Agency for the Bank of England, we understand the issues and trends affecting the region.

RLB is located in the heart of the Manchester and Liverpool business districts and fully immersed within the local markets. Our position in Liverpool has been strengthened through the acquisition of Todd & Ledson in May 2019.

TENDER PRICE FORECAST

REPORTED	2019	2020
Q1 2019	**+1.00%**	**+2.50%**

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THAMES VALLEY

As the UK's third largest property region by activity and value, the Thames Valley is home to an extensive business community working across a diverse range of clusters both within the private and public sectors. The economic prosperity of the region is strengthened by its proximity to the capital and international transport links provided by Heathrow.

RLB has had a presence in the Thames Valley region for over 20 years and continues to be an integral and active contributor within the local property and construction market, promoting collaboration with clients, professionals and supply chain organisations, including the UK Property Forum, to encourage positive change throughout the industry.

We are proud to have been appointed on some of the most prominent and exciting schemes both regionally and nationally with values ranging from between £1m to £1bn, supporting a range of clients including those looking to invest in the region for the first time either from within the UK or internationally.

TENDER PRICE FORECAST

REPORTED	2019	2020
Q1 2019	**+1.50%**	**+2.50%**

Please get in touch:

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Thames Valley

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REGIONAL INSIGHTS

YORKSHIRE & HUMBER

The Yorkshire & Humber offices primarily deliver projects to the east of the Pennines between the national border with Scotland and as far south as Leicestershire.

We are members of the Chamber of Commerce in both the Sheffield and Leeds City Regions, as well as a member of Bondholders in Hull & East Yorkshire. We are also original members of the Sheffield Property Association, the first such association outside of the City of London.

We have delivered major projects including the Wind Amelioration project at Bridgewater Place, Leeds – the tallest building in Yorkshire; the new Accident & Emergency facility at Leicester Royal Infirmary; a major retail project in Sheffield and major Local Authority housing regeneration projects in Doncaster and Rotherham.

With several significant clients within the region, our growth in staff numbers and profile continues. Major framework appointments, including the appointment as lead consultant on the Yorconsult2 framework for public bodies in the region have supported this growth and will continue to deliver core work through the next few years.

TENDER PRICE FORECAST

REPORTED	2019	2020
Q1 2019 (Sheffield)	**+3.75%**	**+4.25%**
Q1 2019 (Leeds)	**+4.15%**	**+4.70%**

Please get in touch:

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ONGO BUILDING
SCUNTHORPE, UK

A large open plan, three storey, steel framed commercial building in Scunthorpe town centre

ABOUT RLB

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INTRODUCTION

CONFIDENCE TODAY INSPIRES TOMORROW

With a network that covers the globe and a heritage spanning over two centuries, Rider Levett Bucknall is a leading independent organisation in cost management and quantity surveying, project management, programme management, building surveying, health & safety, and advisory services.

Our achievements are renowned: from the early days of pioneering quantity surveying, to landmark projects such as the Sydney Opera House, HSBC Headquarters Building in Hong Kong, the 2012 London Olympic Games and CityCenter in Las Vegas.

We continue this successful legacy with our dedication to the value, quality and sustainability of the built environment. Our innovative thinking, global reach, and flawless execution push the boundaries. Taking ambitious projects from an idea to reality.

OUR VISION

Creating a better tomorrow

The Rider Levett Bucknall vision is to be the global leader in the market, through flawless execution, a fresh perspective and independent advice.

Our focus is to create value for our customers, through the skills and passion of our people, and to nurture strong long-term partnerships.

By fostering confidence in our customers, we empower them to bring their imagination to life, to shape the future of the built environment, and to create a better tomorrow.

AT A GLANCE

- Global turnover in excess of £300m
- More than 4500 people worldwide
- Offices in 120 locations across the world

These figures include RLB Euro Alliance

Our Values

At the heart of everything we do

At Rider Levett Bucknall doing the right thing matters.

We believe we all have a responsibility to support the communities in which we live and work. Our global values are based on these seven insights:

People Invest in our people and value their contribution

Industry Lead by example and shape the future of our industry in everything we do

Community Be aware of our social responsibilities and make our contribution to the community

Environment Be conscious of the difference we can make in creating a better tomorrow

Customers Challenge the norm, give fresh perspectives and deliver flawlessly

Suppliers Act with integrity, honesty and fairness in all our relationships

Shareholders Be a self-owned organisation, be financially robust, and deliver agreed financial plans

OUR PEOPLE

UK LEADERSHIP TEAM

Ann Bentley
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Stuart Stables
UK Board Director
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Andrew Reynolds
UK & Global
Board Director
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Mark Weaver
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UK SERVICE LEADS

Russell Lloyd
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Guy Robinson
National Head of Project Management
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Chris Hartley
National Head of Building Surveying and H&S
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Darron Cox
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Mark Schumann
National Head of Advisory Services
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MARKETING

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COMPLIANCE

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DIGITAL SERVICES

Elliott Millin
Head of Digital Services
e. elliott.millin@uk.rlb.com

OUR SECTORS

A core strength of RLB is our sector expertise. Our experts bring their technical expertise to deliver solutions for customers across a number of sectors, sharing our insight, knowledge and independent and objective advice. We work across all sectors of the built environment with a particular focus on the following:

CENTRAL GOVERNMENT AND LOCAL AUTHORITIES
Sector Lead: Steve Gillingham
e. stephen.gillingham@uk.rlb.com

COMMERCIAL
Sector Lead: Matthew Brooker
e. matthew.brooker@uk.rlb.com

DATA CENTRES
Sector Lead: Andrew Fettes-Brown
e. andrew.f.brown@uk.rlb.com

EDUCATION
Sector Lead: Stephen Scott
e. stephen.scott@uk.rlb.com

HEALTHCARE
Sector Lead: Conor Ellis
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INDUSTRIAL & LOGISTICS
Sector Lead: Duncan Robertson
e. duncan.robertson@uk.rlb.com

INFRASTRUCTURE
Sector Lead: Andy Stamps
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NUCLEAR
Sector Lead: Mark Clive
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RESIDENTIAL
Sector Lead: Paul Sambrook
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RETAIL
Sector Lead: Julian King
e. julian.king@uk.rlb.com

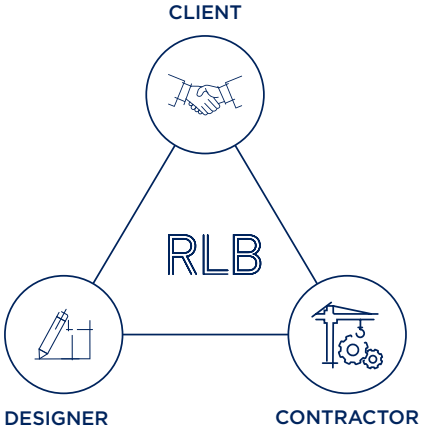
SPORT
Sector Lead: Jonathan Edwards
e. jonathan.edwards@uk.rlb.com

OUR SERVICES

At Rider Levett Bucknall we help our customers improve productivity, achieve efficiencies and add value by delivering the highest standards of technical advice, complemented by our leading digitally enabled innovations.

In a changing industry, dominated by an acceleration in technological innovation, we are adopting new technology and techniques to work faster and smarter. We use data models and analytics to highlight trends and provide the insights needed to help our clients make more informed decisions, more quickly.

We bring fresh perspectives and technical excellence to deliver sustainable outcomes and we believe in offering independent advice within the project environments in which we work.



We leverage the benefits of engaging closely with partner organisations, industry bodies and professional associations. Collaborating with these organisations ensures we uphold the ethics of our profession, can influence the development of industry quality standards, share knowledge, and work together to drive wider industry improvement.

Through our formal Customer Service programme, we welcome feedback from those we work with, so that we can continue to adapt, improve and progress. Our Customer Service principles underpin everything we do. We empower our people to; take personal ownership, be highly responsive, and build collaborative relationships so we can deliver what really matters to our customers and the communities we work within.

Being an independent, owner-managed business, means we are agile and can stay ahead of the changes happening around us.

We place great trust and belief in our people and encourage everyone to make a difference, providing a progressive and challenging environment focused on delivering creative and sustainable solutions for our customers.

Please get in touch:

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UK and Global Board Director

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OUR SERVICES

At RLB we meet the needs of our customers through the flawless execution of our technical services.

In a changing industry with the rise of multi-disciplinary organisations, we believe our services should offer truly independent advice within the project environments in which we work.

COST MANAGEMENT
Head of Service: Russell Lloyd
e. russell.lloyd@uk.rlb.com

PROJECT MANAGEMENT
Head of Service: Guy Robinson
e. guy.robinson@uk.rlb.com

PROGRAMME MANAGEMENT
Head of Service: Darron Cox
e. darron.cox@uk.rlb.com

BUILDING SURVEYING
Head of Service: Chris Hartley
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HEALTH & SAFETY
Head of Service: Chris Hartley
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ADVISORY
Head of Service: Mark Schumann
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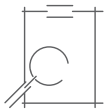
The following pages include a full overview of our service offering.

COST MANAGEMENT



Head of Service: Russell Lloyd
e. russell.lloyd@uk.rlb.com

Our approach to cost management is one which focuses on the business needs of the customer and delivers a cost management service which enables them to make informed decisions in relation to their project.

Our range of services is enhanced by our sector expertise and appropriate, experienced staff that will provide positive advice at the various stages of the project cycle. Our cost management services include:

MASTERPLANNING

Our cross sector expertise combined with our benchmarking and cost modelling tools enable us to provide dynamic optioneering to support masterplanning studies.

FEASIBILITY STUDIES

Our internal benchmark information enables us to provide a speedy response at early stages of a project to assess if the project requirements can be achieved and to offer alternative solutions if appropriate.

BENCHMARKING

Our in-house benchmarking tool Total Cost Management (TCM) provides verified cost analysis across all building types. TCM identifies generic benchmark costs and specific project abnormals.

COST MODELLING

This can be used as a dynamic tool to review alternative design options and explore 'what if' scenarios to identify the most cost effective options within the parameters of the brief.

COST MANAGEMENT

COST PLANNING

Our cost plan will be an elemental estimate, which will form the key cost management control document and will be prepared in conjunction with the whole project team to ensure ownership of the budget. All future changes will be managed against the signed off cost plan.

Our in-house cost planning tool ROSS5D is industry leading and supports quantity extraction from BIM models.

BIM

We have invested in development and training to ensure our BIM capability is at the forefront and have formed a Global BIM Group to collate best practice. We utilise various software tools to verify accurate quantity extraction. Our BIM Protocol helps clients and design teams understand our approach to working in the BIM environment.

LIFE-CYCLE COSTING

Using our expertise and experience in Facilities Management we have developed a Life-cycle Costing tool that can be utilised for both design optioneering and whole life costing.

VALUE ENGINEERING

We will work with the project team, and where required, facilitate workshops in order to undertake a structured review at key project stages to ascertain that the project is meeting the functional requirements of the brief.

RISK ANALYSIS AND RISK MANAGEMENT

We will advise the project team on strategies for identifying and minimising specific risks together with appropriate levels of cost and a methodology for managing risks within the identified levels.

SPECIALIST MECHANICAL AND ELECTRICAL COST ADVICE

Our specialist surveyors are able to add value by providing cost advice in relation to services and, where appropriate, are able to challenge design.

PROCUREMENT ADVICE

We can undertake a review of the customer's appetite for risk and principal objectives in relation to cost certainty, quality of design, workmanship and programme. We can then provide recommendations relating to the optimum procurement method to best achieve these objectives.

CONTRACTOR/SUPPLIER EVALUATION

Evaluating the most suitable contractors/suppliers for a project based upon scope, content, complexity, procurement and the need for specialist knowledge and innovative thinking.

TENDER AND CONTRACT PREPARATION AND EVALUATION

Preparation of tender and contract documents which provide details of the project requirements and clearly identify responsibility for risks. Bid evaluation ensures compliance with the customers requirements.

PRE AND POST CONTRACT COST CONTROL

A key element of our role is to manage the costs within the signed off budget through:

- Regular cost reporting and forecasting
- Proactive cost checking of design development
- Value engineering
- Alternative cost studies
- Post contract cost control including change order management.

PROJECT MANAGEMENT

Head of Service: Guy Robinson
e. guy.robinson@uk.rlb.com

Our project management services relate to projects across all stages, helping our clients through feasibility, design procurement, construction and handover.

RLB manages the overall planning, co-ordination and control of a project from inception to completion based on a thorough knowledge of project governance, project planning and scheduling, contract administration, financial and risk management and cross-disciplinary communication. We proactively assess, challenge and mitigate Health and Safety risks.

RLB recognises that different sectors and clients have varying needs and we offer project management services that can be tailored to provide the right service level for our clients to achieve the best project outcomes.

We do this by creating collaborative team environments working closely with all stakeholders to establish the key projects drivers, such as sustainability requirements and success criteria.

RLB aims to meet our client's requirements to produce a functionally and financially viable project that will be completed on time, within authorised cost and to the required quality standards.

Our project managers use exemplar systems and processes aided by advanced technologies and digital real time reporting procedures.

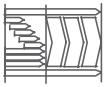
RLB is BSI certified for project management and via our national coverage has extensive experience in delivering complex projects within the UK.

We draw upon best practice from our worldwide offices and work closely with our global clients.

RLB's project management services include:

- Project management
- Risk management
- Employer's agent / Contract administration
- Stakeholder management
- Development management
- Project handover & Close out services
- Fund & project monitoring
- Projects audits & recovery
- Planning / Scheduling
- Independent certifier
- Technical advisor

PROGRAMME MANAGEMENT



Head of Service: Darron Cox
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RLB's team of programme managers deliver an integrated programme management consultancy providing leadership and commitment to delivering strategic change.

We have a demonstrable reputation for technical excellence and a strong track record in delivering innovative, cost-effective and outcome-oriented services. We have:

- A clear track record in delivering efficient and effective solutions
- An excellent approach to programme management underpinned by our Integrated Management System (IMS) RLB Intelligence
- The ability to bring best-industry-practice in consultancy services
- Experience of delivering sustainable solutions based upon our extensive cross sector knowledge
- Effective use of project collaboration and field-based technology to deliver quality outputs

Our Programme Management Office (PMO) is the expert hub providing governance and live "at a glance" dashboard reporting through RLB Focus. Our tablet and smart phone app, RLB Field, enables our team to produce reports in real-time from site. Within our PMO we also have expertise in Supplier Management and Risk and Issue Management.

We utilise RLB Field to capture data live from site utilising our bespoke electronic forms providing instant secure programme data to our programme management systems for translation to our RLB Focus interactive web based dashboard. The RLB Focus interactive dashboard allows our Customers to explore and interrogate the programme data from their mobile device. The interactive nature of RLB Focus means that the data can be represented at all levels from high-level management data, right the way down to the raw data.

RLB has the hard protocols and robust systems in place to manage the programme and project timelines, communications, cost and risk and possesses highly effective soft skills to make the difference. We integrate with all the professional disciplines to achieve one team and true collaboration without any waste of effort. We recognise that project budgets are to be maximised and it is our role to drive the best efficiency and value.

RLB is BSI certified for programme management.

Our approach is always shaped to suit the sector and customer and we recognise the importance of setting up the programme processes, timelines and management principles as the key to success. Our specialist programme managers work with an unrivalled passion to deliver successful change.

BUILDING SURVEYING

Head of Service: Chris Hartley
e. chris.hartley@uk.rlb.com

RLB's building surveying team has the ability to improve the effectiveness and value of buildings of every type, in every sector.

We provide advice and expertise in relation to built assets and investments both nationally and internationally.

Our services span across all sectors and we have a robust track record of advising on multi-million pound structures and estates through to modest adaptations, extension, new build and repairs. We report upon buildings of all ages including structures of architectural and historic importance.

When providing advice we work closely with our customers to tailor our reporting to suit their needs in a variety of innovative and flexible ways. This ensures our services are communicated in a manner to suit the audience.

RLB's building surveying team can give you confidence that your property assets are efficient and effective, at any stage of their life. We have the skills, expertise and track record to make them perform better.

We embrace digitisation and are at the forefront of using innovative procedures and technology to provide real value to our customers. We use a number of platforms, including RLB Field, which proves invaluable in all types of data collection and reporting on large estates. This ensures accuracy and a fully addressable database enabling specific and detailed reporting on elements of an asset. This brings benefits in trend analysis, driving economies in innovative approaches to estate asset management.

Our building surveyors naturally bring commercial awareness and ability, ensuring we are adding maximum value to built assets.

RLB's building surveying team offers professional and regulatory services, project services and survey services, often in a combined and seamless service delivery. These include:

- Technical due diligence
- Pre-acquisition surveys
- Clerk of works / Quality monitoring
- Defect analysis and remedy
- Dilapidations
- Party walls and boundary issues
- Accessibility and inclusive environments
- Planning application, listed building and building Development / Project monitoring
- Estates strategies
- CAD
- Move/Churn management
- Space utilisation and planning
- Design services
- Works management
- 6 facet surveys
- Condition surveys and Asset management
- Measured surveys

HEALTH & SAFETY AND CDM SERVICES

Head of Service: Chris Hartley
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RLB provides a comprehensive range of health and safety consultancy services. Our team of health & safety professionals provide our customers with advice and assistance to help achieve compliance with their statutory duties under existing health & safety legislation for construction projects, maintenance and repair works, occupation and operations.

Our service is designed to ensure 100% legislative compliance and provides added value, through our specialist expertise in design development, construction safety and occupational and operational safety. Our service is quality assured, with corporate recognition from the Association of Project Safety, CHAS, Safety Systems in Procurement (SSIP) and Safe Contractor approved.

Our dedicated health and safety practitioners are registered on the HSE's approved Health and Safety Consultants Register (OHSCR) and hold recognised qualifications not only in health and safety (IOSH etc) but also in property and construction (RICS, CIOB, etc). Our experts are active members of industry working groups, bringing our customers an insight and knowledge of future health and safety initiatives.

Our health and safety services team operate throughout the United Kingdom, and through our extensive network of offices, we are able to deliver a local, personal service to all our customers.

Our services include:

Construction Design and Management Services

RLB was shortlisted as CDM Consultant of the Year, by the Association of Project Safety in 2018. We have successfully provided Construction Design and Management (CDM) services since the introduction of the CDM Regulations in 1994. RLB were heavily involved in the drafting of the 2007 and 2015 CDM Regulations. Whether in the role of principal designer, Principal design advisor or independent client advisor, we provide professional advice, detailed recommendations and encourage co-ordinated solutions for the successful implementation to a wide range of customers. We have the resources, systems and flexibility to deliver programmes and projects from minor refurbishments to major complex regeneration projects.

Other Legislative Services

- Construction safety advice
- Compliance reviews and corporate risk management
- Health and safety training
- Fire safety and compliance
- Monitoring – audits, inspections and surveys
- Asbestos management

RLB is committed to:

- Making occupational health and safety simple, cost effective and an integral part of managing construction projects
- Identifying hazards and associated risks, as early in the design stage, as possible
- Encouraging cooperative and collaborative working between all parties
- Fully engaging all duty holders in the principles of prevention
- Improving occupational health and safety project planning
- Reducing unnecessary paperwork and promoting better communication, consultation and collaboration.

ADVISORY

Head of Service: Mark Schumann

e. mark.schumann@uk.rlb.com

At RLB we group specialist consultancy services under the term Advisory.

We offer:

- Design management
- Specification consultancy (RLB | Schumann)
- Strategic facilities management
- Sustainability consultancy
- Contract advisory

Our commitment to our customers is based on our core strengths and passion for delivering quality projects, often operating behind the scenes providing services that protect and enhance the outcome of a Project, its Architect or End-user. Our services have been developed, tailored and applied to many high profile projects across the globe working with some of the world's most prestigious customers and designers.

We can provide high level expert advice as well as more practical support with documentation, contractual matters, sustainability assessments, whole-life cost modelling, project or office wide design team set-up, hands on project administration, reporting, and planning.

We deliver specialist services and our thought leaders apply their knowledge to achieve the optimum result. We deliver with pride and professionalism, based on the foundation of expert practical advice.

DESIGN MANAGEMENT

Head of Service: Mark Schumann

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RLB offers Design project management services to help designers deliver more with less. Design teams can concentrate on their core service while our Design project managers focus on the programme of deliverables and contract commitments. We include an option to co-locate with the Lead Designer to be at the heart of the design team.

Our approach is based on a clear understanding of the design process, through our experience of working closely with and as part of design teams. We bring good management techniques without stifling creativity, and tailor our scope to meet the specific needs of a project.

Our personnel are familiar with the problems experienced by design teams. We understand that this is different to traditional project management. We integrate into your team, acting as both a buffer and a link. We filter and respond to queries and issues, and facilitate solutions.

Our services typically commence upon appointment to the design team, but can begin with bid preparation and/or cease on the issue of tender documentation. We perform the essential monitoring role, coordinating the delivery of all design team members and bringing our bespoke toolkit to deliver a wide range of services.

ADVISORY

SPECIFICATION CONSULTANCY

Head of Service: Mark Schumann

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RLB is a market leader in the field of specifications. In 2016, RLB merged with Schumann Consult, bringing the world's largest and leading independent specification consultancy business into its suite of Advisory services.

Our service is tailored around protecting the architect and customer through the preparation of robust and powerful specifications, whilst also improving the construction industry and the standard of design documentation.

Through years of practical project experience, we have learnt and understood the complexities and intricacies of what is required on projects, ensuring that our specifications reflect the complex world of procurement and adhere to local specification formats and standards. We are fully BIM conversant, with solutions that seamlessly integrate the specification into any BIM model.

Our key services are:

- Preparation of Architectural Specifications, to suit any form of procurement, produced in any format used around the world, such as CAWS – Common Arrangement, CSI Masterformat, NATSPEC, QCS – Qatar Construction Specification etc.
- Outline and Tender Architectural Specifications
- Manufacturer Product Specifications, with compliant BIM models where required
- Standard Specifications for Developers
- Standardised office-wide system and product libraries and strategies to Architects

A well prepared and coordinated specification communicates what the project customer is buying from the contractor. It deals with scope, quality, activity, and responsibility, and as such complements the contract conditions and other documentation. During construction, the specification is used to check the adequacy of the contractor's work on-site, as well as providing a reference point for the determination of variations.

One size does not fit all when it comes to specifications. Every project is different, as is its project location. Because of this, we offer a range of different specifications to suit the specifics of your project. We can produce specifications in CAWS, CSI and various other local specification formats. As part of the process, we will always discuss with you which specification is appropriate.

Our job is to provide you with a specification that gives you the confidence that your risk has been mitigated. We take away the task of specification production, allowing you to focus on the design.

Our team of experts will ensure that each specification is tailored specifically to your project, the procurement route, contractual process and location, in whichever format is the prevailing requirement.

ADVISORY

STRATEGIC FACILITIES MANAGEMENT

Contact: David Quirk

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Facilities management is a multi-billion pound industry that organisations around the world rely on to be successful in achieving their objectives. Yet it is rarely implemented to ensure optimum workspace efficiency and value for building owners and occupiers.

RLB has built its reputation on providing world class advice on the built environment when our customers wish to develop and improve the spaces they are responsible for.

Our Facilities management consultancy service covers the entire life-cycle of property, aimed at maximising the performance of built assets and delivering best value.

Our customers develop structures and space in the built environment for many reasons, be it commercial, functional, aesthetic, inspirational, or out of necessity. What is common to all is the need to get the most value from that space, and understanding how that should be measured.

Effective and focused facilities management is the key enabler to ensuring this happens, supporting customers throughout the entire asset lifecycle. RLB's facilities management consultancy team offers the benefit of many years of experience and expertise in strategic asset and facilities management.

The team has worked in operational roles in our careers, and have experience of working in a wide range of private and public sector organisations, giving us a holistic view of your built asset requirements.

We understand your property and FM challenges and know how to support you in achieving your objectives.

Our services include the following:

- FM and estates strategy review and development
- Asset management strategies
- Service improvement programmes
- FM services procurement
- Services design review
- FM cost reduction and rationalisation
- Supplier review and benchmarking
- Contract monitoring, including PFI
- Interim management support
- Contract performance review and audit
- FM technical adviser
- Whole life cost adviser and BREEAM support
- BIM and Soft Landings adviser

ADVISORY

SUSTAINABILITY CONSULTANCY

Head of Service: Heather Evans

e. heather.evans@uk.rlb.com

SKA Consultancy

Our service is tailored around ensuring sustainable project delivery, with expert knowledge provided every step of the way. The SKA Rating system allows for bespoke assessments, targeting achievable sustainability that contributes to the wellbeing of building occupants.

RLB has RICS qualified SKA rating Assessors for all three schemes; Offices, Retail and Higher Education. Our SKA rating Assessors can assist through each stage of the project.

As experienced practitioners the RLB team has helped customers achieve sustainable results and benefit from:

- Reduced operational and maintenance costs
- Improved CSR
- Employee engagement and churn reduction
- Enhanced health and wellbeing for building occupants
- Recognised level of achievement in sustainability

SKA comprises more than one hundred 'good practice' measures covering energy and CO_2 emissions, waste, water, materials, pollution, wellbeing and transport. We understand that all fit-out projects are unique in terms of employers' requirements, the building or site, and scope of works. By applying SKA rating to a project, the assessment scores the project only on the basis of those measures that are relevant to the project.

RLB works closely with our customers to tailor the service to suit your needs, including in-depth workshops, presentations to the wider stakeholders and provision of expert advice on specialist areas. We engage at the earliest possible stage with design team and contractors in order to facilitate achieving the targeted SKA Rating.

RLB is a market leader in the SKA field, being a Development Partner for RICS on the SKA Higher Education scheme and developing the Good Practice Measures that projects are now rated against. Testament to our expertise, we have certified the first Gold, Silver and Bronze Higher Education ratings as well as the first SKA Gold Commercial rating in the North West and in Sheffield.

BREEAM Consultancy

We provide BREEAM New Construction assessments; our services run from early stage pre-assessments through to design stage and post-construction review and certification. Utilising RLB's in-house expertise, we offer a range of services which complement and support BREEAM.

The Building Research Establishment Environmental Assessment Method (BREEAM) is a widely used assessment method for measuring and optimising the environmental sustainability performance of buildings. A BREEAM certification demonstrates that a project's design has considered environmental and social impacts, and has put measures in place to mitigate against these impacts, improving the experience of future residents and occupants as well as reducing negative environmental effects, ensuring long-term sustainability.

For each of these areas, credits are awarded according to performance. These credits are weighted and combined to calculate an overall score. Credits are awarded based on the level of performance against each section and the performance is then rated as 'Pass', 'Good', 'Very Good', 'Excellent' or 'Outstanding'.

BREEAM Accredited Professional

Our in-house BREEAM Accredited Professionals (AP) engage and provide customer teams with advice on sustainability, environmental design and assessment. As BREEAM APs, we can facilitate the team's efforts to: successfully schedule activities; set priorities and; negotiate the trade-offs required to achieve a target BREEAM rating when the design is formally assessed.

ADVISORY

CONTRACT ADVISORY SERVICES

Contact: Aziz Mehtajee

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Timely use of RLB's contract advisory specialist intervention can provide the ability to mitigate and resolve disputes and provide the desired outcomes.

We identify the needs, investigate and find a solution to project challenges through our consulting advisory and expert services.

Setting up contracts with a clear understanding and allocation of risks between the parties will be central in providing positive project outcomes. Even when parties enter into a dispute, mitigating and resolving disputes in a manner most favourable to the party will be of vital importance.

RLB's contract advisory service, with its subject matter experts, helps support customers on their projects during all stages from procurement and contract implementation to providing advice during the project delivery phase and assisting in the event of disputes arising.

Our contract advisory team specialises in:

- Specialist procurement and contractual advice
- Dispute avoidance
- Dispute resolution
- Expert witness work

The expertise and experience of our team covers the spectrum of the construction industry; from the private and public sectors to highways, utilities and specialist areas such as aviation and mining. In addition we have experience in the use of the various forms of contracts, providing customers, contractors and the supply chain with the required rounded knowledge and delivering the support required to enable positive outcomes.

OPPORTUNITIES AT RLB

We invest in our people and value their contribution. Our people are united through our shared values, and these principles are integral to our identity, to our culture and they underpin our long history and our heritage.

Whatever stage of your career, we will provide a stimulating environment to help you fulfil your potential.

RLB Experienced Professionals Programme:

- Qualified Professionals
- Experienced Professionals
- Associates
- Partners

RLB Future Professionals Programme:

- **Protégé:** RLB's graduate recruitment and training programme, offering first-class structured professional training programmes to support achievement of your professional qualification.
- **Year Out:** Opportunities to work with our teams throughout the UK across a range of sectors.
- **Apprenticeships:** Whilst learning on-the-job, you'll also gain an academic and professional qualification.
- **Internships and work placements:** We offer flexible placements for undergraduates and graduates across all disciplines.

If you are interested in joining our team, please visit RLB.com or email careersinbox@uk.rlb.com.

Hilary Richardson
Head of Human Resources

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RLB EURO ALLIANCE

The RLB Euro Alliance is a formally established network of partner organisations across Europe each committed to delivering high quality services at a local level, utilising extensive knowledge and experience regionally as part of the RLB global network.

AT A GLANCE:

- 20 affiliates
- Over 1450 staff across Europe
- Operating across 32 countries

Please contact:

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Belgium
Bopro NV

Bulgaria / Croatia / Serbia / Montenegro / Romania
Bates

Czech Republic
H1K

Denmark
Emcon A/S

France / Luxemburg
Sterling Quest Associates

Germany
MTM Project Solutions GMBH

Greece
LDK Consultants

Hungary
Tomlin Project Management

Ireland
Kerrigan Sheanon Newman

Italy
Bear Project Management

Netherlands
Skaal

Norway
AS Bygganalyse

Poland
APP Projekt

Portugal
FICOPE

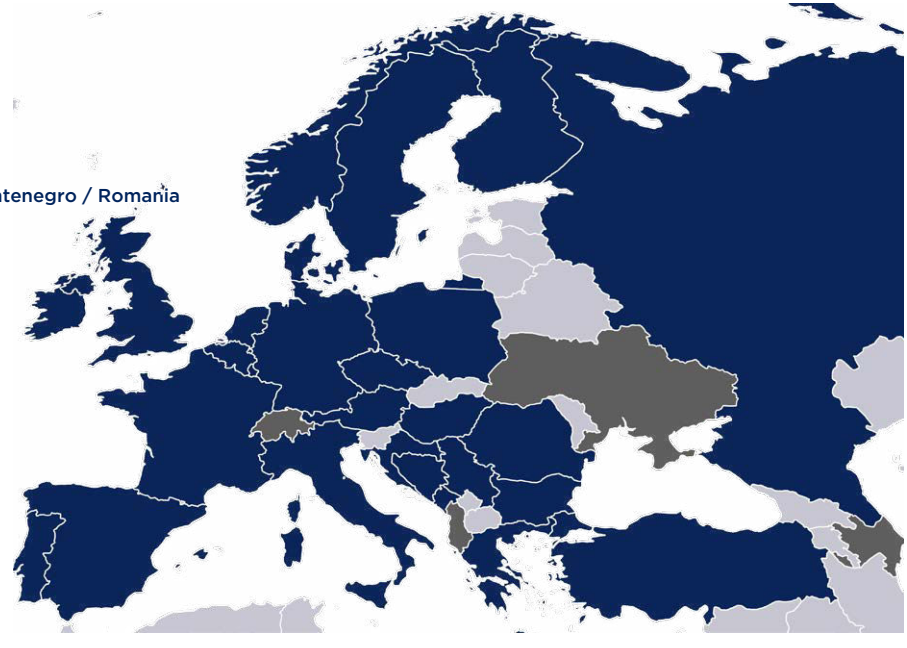
Russia
DBC Consultants

Spain
APM Management

Sweden
ÅF Consult

Turkey
Pro^GE

UK
Rider Levett Bucknall

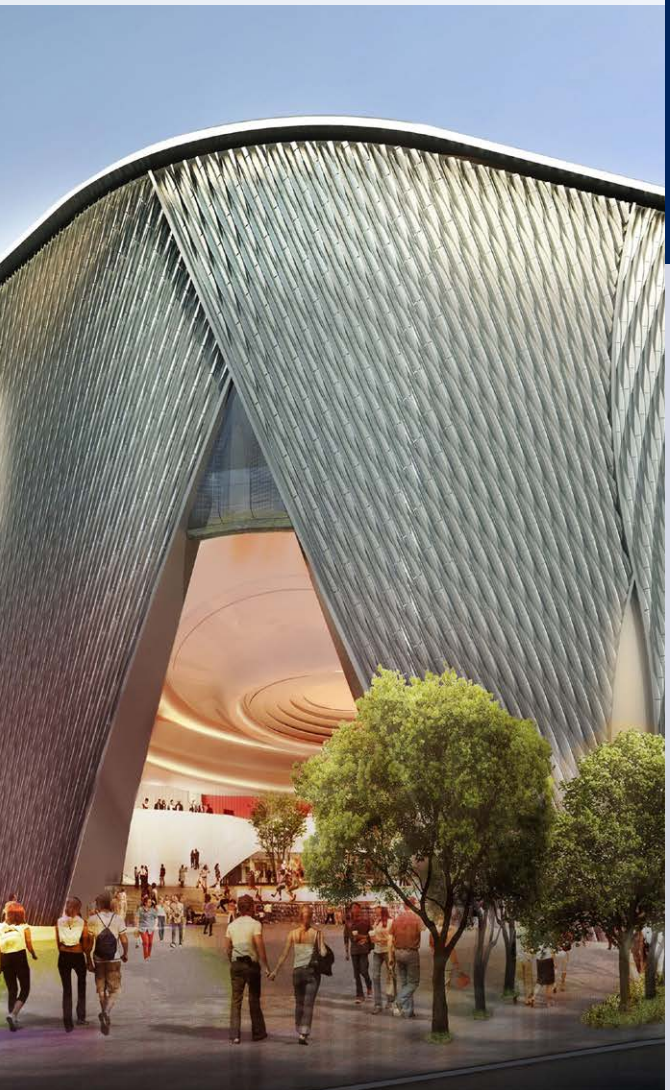


RLB Euro Alliance office location

RLB Euro Alliance project experience

XIQU CENTRE
HONG KONG

A Chinese Opera House - the winning design of an international design competition, inspired by traditional Chinese lanterns



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140 Africa
141 Americas
142 Asia
145 Middle East
146 Oceania

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TERMINAL 2 EXPANSION PROJECT
SINGAPORE CHANGI AIRPORT

MISCELLANEOUS

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CONVERSION FACTORS

To convert	Multiply by
Area	
Square inches into square millimetres	645.16
Square inches into square centimetres	6.4516
Square feet into square centimetre	929.0304
Square feet into square metres	0.092903
Square yards into square feet	9.00
Square yards into square metres	0.836127
Square metres into square feet	10.7639
Square metres into square yards	1.19599
Square yards into acres	0.000206612
Acres into square metres	4046.8564
Acres into square yards	4840
Acres into hectares	0.4046856
Hectares into acres	2.47105
Hectares into square metres	10000
Square kilometres into hectares	100
Square miles into square kilometres	2.589988
Square miles into acres	640
Square kilometres into square miles	0.386102
Volume and Capacity	
Cubic inches into cubic centimetres	16.387064
Cubic inches into litres	0.0163871
Cubic feet into cubic metres	0.0283168
Cubic feet into litres	28.316847

To convert	Multiply by
UK pints into litres	0.5682613
US pints into litres	0.473176
UK litres into pints	1.75975
UK litres into gallons	0.219969
US litres into gallons	0.26417
US litres into pints	2.1134
Cubic yards into cubic metres	0.7645549
UK gallons into litres	4.54609
US gallons into litres	3.78541
UK gallons into cubic metres	0.00454609
UK fluid ounces into cubic centimetres	28.413063
Mass	
Grains into metric carats	0.323995
Grams into ounces	0.035274
Ounces into grams	28.349523
Ounces into kilograms	0.0283495
Pounds into kilograms	0.4535924
Kilograms into pounds	2.20462
UK Tonnes into kilograms	1016.0469
UK Tonnes into metric tonnes	1.01605
Tonnes into pounds	2,240
UK Tonnes into US tons	1.01605
US Tons into UK tonnes	0.907185

CONVERSION FACTORS

To convert	Multiply by
Length	
Milli-inches into micrometres	25.4
Inches into millimetres	25.4
Inches into centimetres	2.54
Inches into metres	0.0254
Centimetres into inches	0.393401
Feet into millimetres	304.8
Feet into centimetres	30.48
Feet into metres	0.3048
Yards into metres	0.9144
Fathoms into metres	1.8288
Chains into metres	20.1168
Furlongs into metres	201.168
Miles, statute into kilometres	1.609344
Miles, nautical into kilometres	1.852
Temperature	
Degree Celsius to Degree Fahrenheit	°F = (°C x 9/5) + 32
Degree Fahrenheit to Degree Celsius	°C = (°F-32) x 5/9

CALCULATION FORMULAE

To convert	Multiply
Area of Triangle	Base by 1/2 height
Area of circle	$(\text{radius})^2$ by 3.1416
Area of sector of circle	Length of arc by 1/2 radius
Area of square, rhombus	Base x height
Area of equilateral triangle	$(\text{Side})^2$ x 0.433
Area of trapezium	Height x 1/2 x (sum of parallel sides)
Area of ellipse	Major axis by minor axis x 0.7854
Area of parabola	2/3 x base x height
Circumference of circle	Diameter x 3.1416
Surface area of sphere	4 x $(\text{radius})^2$ x 3.1416
Surface area of cone	(radius by slant side by 3.1416) + area of base
Volume of cylinder	Area of base by height
Volume of cube or prism	Length by breadth by depth
Volume of cone	Height by 1/3 area of base
Volume of hexagonal prism	$(\text{side})^2$ by height by 2.598
Volume of Sphere	4/3 x $(\text{radius})^3$ x 3.1416

MISCELLANEOUS

REFERENCES

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