



RIDERS DIGEST 2018

UNITED KINGDOM
EDITION



IKEA
EXETER, UK

Targeting a BREEAM rating of Excellent

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Bucknall

RIDERS DIGEST

2018 EDITION

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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 2nd Quarter 2018 and expressed in British Pounds unless otherwise stated. References to legislative provisions and regulations are as at 2nd Quarter 2018. 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 2018 edition of the Riders Digest; the essential guide to the UK Construction Industry.



We believe now more than ever it is important to lead by example, and help shape the future of our industry in everything we do.

Collaborating with industry colleagues is a vital part of being a catalyst for change in the built environment; and we were delighted to support Build UK in the launch of its Professional Services Membership Category. We look forward to this developing and to other consultants and professional advisors becoming members.

Alongside industry colleagues, we are playing our part to overcome the gender bias across the industry by recruiting a more diverse workforce. RLB was one of the first companies in the construction industry to release our [Gender Pay Gap Report](#). Within this report we highlighted some of the initiatives we are continuing to implement; to encourage more women into construction, encourage women (and men) to stay in the industry, develop female leaders, and deliver succession programmes. We are committed to our target of 40% of all our staff and 20% of our most senior roles being filled by women by 2025. Our vision is "To embrace and incorporate Equality, Diversity and Inclusion into the fabric of the RLB business, because it is the right thing to do".

The Apprenticeship Levy, which launched in 2017, has successfully reaffirmed the value of apprenticeships to the workplace. We currently have 15 degree apprentices working across the UK, a record number for the company, which reinforces our belief that apprenticeships can act as an important pathway to a great career.

For a third consecutive year, RLB has been voted the number one cost consultant partner in World Architecture 100. Testament to our relationship with our industry colleagues across the globe, we thank all of our partners who work with us to shape the future of the built environment, and to create a better tomorrow.

We continue to enjoy close working relationships with our customers and peers in the UK and internationally, and focus on providing insight that will help projects succeed. We have compiled a selection of insights from RLB colleagues around the world in our inaugural global Perspective magazine. Featured in excerpts throughout the Riders Digest ([and available to read in full at RLB.com](#)), Perspective offers informed and fresh commentary on a range of key industry topics.

We hope you enjoy the Riders Digest 2018, and please get in touch with any feedback.

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MARKET OUTLOOK - DISRUPTION AND TRANSFORMATION



The construction industry is on the cusp of transformation.

The impact of the UK leaving the EU will inevitably affect the construction industry on-the-ground, particularly labour availability and the import and export of materials and equipment.

Running in parallel, with the ambition to improve productivity across the whole of UK industry, is the Government's Industrial Strategy. The construction sector deal will form an important part of this national strategy. This is being driven by the Construction Leadership Council (CLC). The overarching intent of the CLC is to deliver better solutions through the use of digital technology, to improve quality and safety through increased use of pre-manufactured components and to optimise the whole-life performance of built assets.

Aside from Brexit, other recent government initiatives will have major impacts on our industry. The recent Government announcement of the presumption in favour of off-site

manufacture for the new-build construction work of five major Government departments lays down a challenge for the construction sector. Another initiative is the review of the current Building Regulations, carried out by Dame Judith Hackitt in the wake of the Grenfell tragedy.

The need to do things differently is exemplified by the demise of Carillion in the early part of 2018. The impact of Carillion's collapse is still reverberating through the industry and the true impact has not yet been fully felt.

Mark Farmer's Review for the CLC speaks about "low industry margins, adversarial pricing models and financial fragility, interlinked with the issues of productivity, predictability and structural fragmentation."¹ This is exactly why public sector construction best practice advocates the use of Project Bank Accounts, which are equally applicable in the private sector.

We are living through rapidly changing times, but with change comes opportunity for the industry to improve. The CLC is at the forefront of this change, bringing together leadership from across the industry, including RLB Global Board Director Ann Bentley.

There is no doubt that disruption and transformation are the watchwords of the moment.



NATIONAL AUTOMOTIVE INNOVATION CENTRE
COVENTRY, UK

RLB is providing QS, EA and PD services, helping to deliver a 33,000m² world-class automotive research centre - the largest of its kind in Europe.

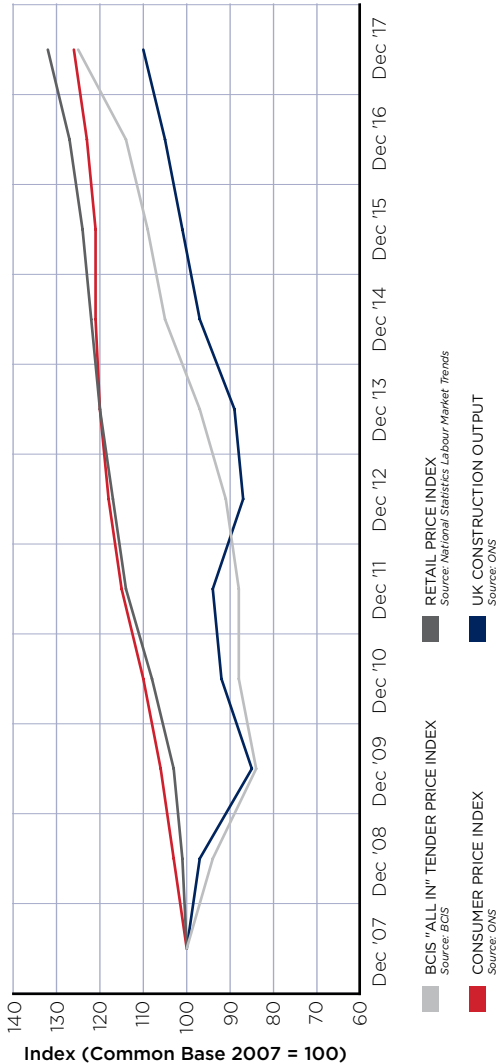
UK CONSTRUCTION TRENDS

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- 4 UK Construction Output by Sector
- 6 UK Construction Materials Monthly Average Price Index

The National Automotive Innovation Centre is a partnership between Jaguar Land Rover, Tata Motors European Technical Centre, and WMG, University of Warwick

UK CONSTRUCTION TRENDS

INDICES AND UK CONSTRUCTION OUTPUT COMPARISON

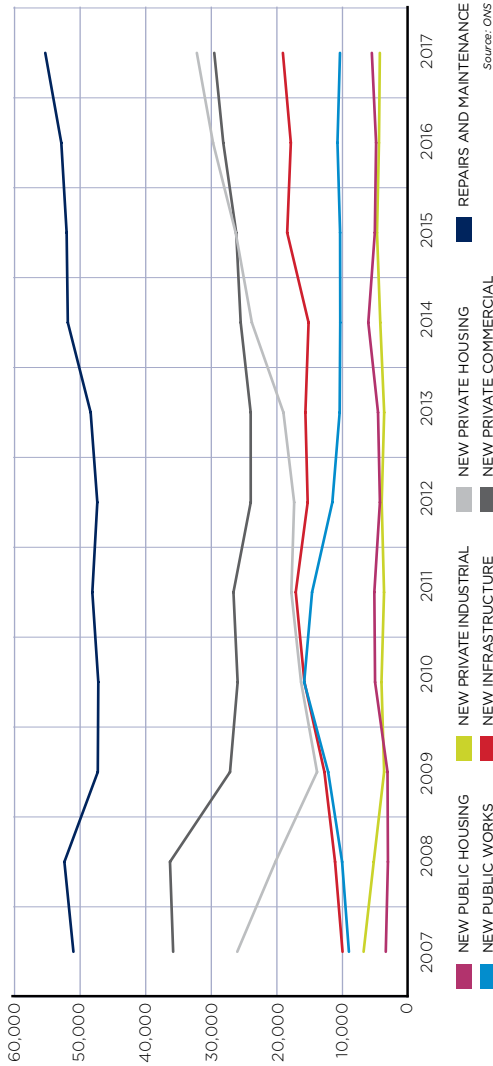


UK CONSTRUCTION TRENDS

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
BCIS "All-in" Tender Price Index	100	94	84	88	88	91	97	105	109	114	125
Retail Price Index (RPI)	100	101	103	108	114	117	120	122	124	127	132
Consumer Price Index (CPI)	100	103	106	110	115	118	120	121	121	123	126
UK Chain Volume Construction Output	100	97	85	92	94	87	89	97	101	105	110
BCIS "All-in" Tender Price Index % Change	Base	-6.4%	-9.9%	+4.1%	+0.3%	+3.2%	+6.3%	+8.7%	+3.7%	+4.9%	+9.3%
Retail Price Index (RPI) % Change	Base	+0.9%	+2.4%	+4.8%	+4.8%	+3.1%	+2.7%	+1.6%	+1.2%	+2.5%	+4.1%
Consumer Price Index (CPI) % Change	Base	+3.0%	+2.9%	+3.6%	+4.3%	+2.6%	+2.0%	+0.5%	+0.2%	+1.6%	+2.9%
UK Chain Volume Construction Output % Change	Base	-2.6%	-13.2%	+8.4%	+2.2%	-6.9%	+1.5%	+9.0%	+4.4%	+3.9%	+5.1%

UK CONSTRUCTION TRENDS

UK CONSTRUCTION OUTPUT BY SECTOR



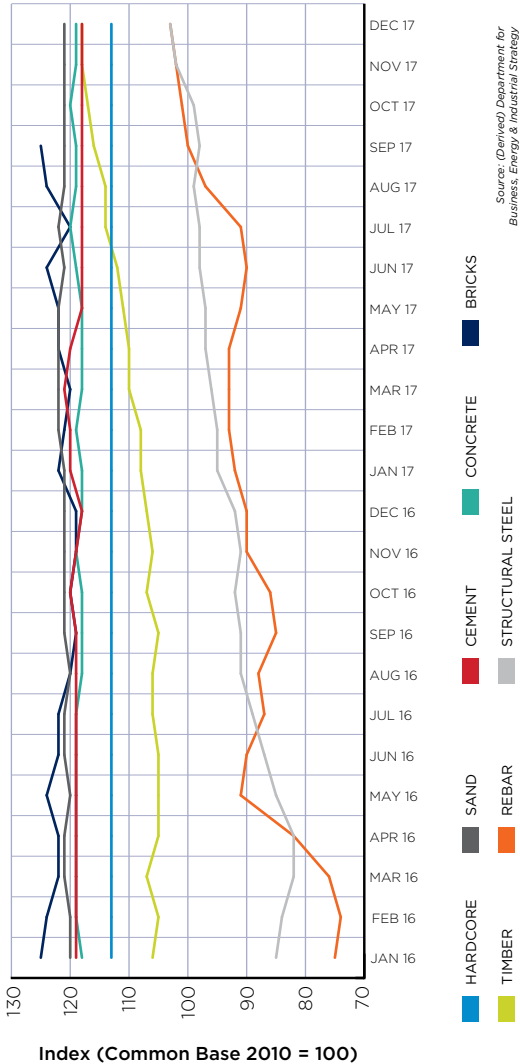
UK CONSTRUCTION TRENDS

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
NEW PUBLIC HOUSING	3,410	3,085	3,148	5,013	5,122	4,287	4,570	6,027	5,049	4,861	5,498
NEW PRIVATE HOUSING	26,035	20,236	13,896	16,330	17,807	17,377	19,012	23,816	26,277	29,717	32,182
NEW PRIVATE COMMERCIAL	35,795	36,276	27,161	26,003	26,637	24,015	24,023	25,541	26,219	28,183	29,552
NEW PRIVATE INDUSTRIAL	6,746	5,226	3,666	4,062	3,678	4,029	3,658	4,244	4,733	4,439	4,308
NEW PUBLIC WORKS	9,037	10,068	12,177	15,808	14,614	11,546	10,439	10,350	10,374	10,770	10,387
NEW INFRASTRUCTURE	10,010	11,144	12,759	15,786	17,105	15,296	15,641	15,162	18,403	17,851	19,055
REPAIRS AND MAINTENANCE	51,036	52,403	47,342	47,265	48,170	47,415	48,425	51,884	52,064	52,871	55,300

NOTE: Figures are Construction Output Volume (£ million)

UK CONSTRUCTION TRENDS

UK CONSTRUCTION MATERIALS MONTHLY AVERAGE PRICE INDEX



UK CONSTRUCTION TRENDS

	2016												2017											
	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	120	120	121	121	120	121	119	119	119	119	119	119	121	121	122	122	122	121	122	121	121	121	121	121
Cement	119	119	119	119	119	119	119	119	119	119	119	119	120	120	121	120	118	118	118	118	118	118	118	118
Concrete	118	119	119	119	119	119	119	118	118	118	118	118	119	119	118	118	118	119	120	119	119	120	119	119
Bricks	125	124	122	122	122	122	122	120	119	120	119	119	122	121	120	122	122	124	120	124	125	NP	NP	NP
Timber	106	105	107	105	105	105	106	106	105	107	106	107	108	108	110	110	111	112	114	114	116	117	118	118
Structural Steel	85	84	82	82	85	87	89	91	91	92	91	92	95	95	96	97	97	98	98	99	98	99	102	103
Rebar	75	74	76	82	91	90	87	88	85	86	90	90	92	93	93	93	91	90	91	97	100	101	102	103

NP = Not Published

HALLSVILLE QUARTER
LONDON, UK

Creating a new London neighbourhood



UK CONSTRUCTION COST DATA

- 10 Building Costs
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- 20 Construction Elements

UK CONSTRUCTION COST DATA

BUILDING COSTS

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff	
			Low	High	Low	High	Low	High	Low	High
Offices; Prestige CBD	10-25 Storeys	GBP/m ²	1,380	1,940	1,920	2,800	2,000	2,900	1,700	2,400
Offices; Investment CBD	Up to 10 Storeys	GBP/m ²	1,200	1,600	1,560	2,200	1,640	2,400	1,480	1,980
Offices; Investment CBD	10-25 Storeys	GBP/m ²	1,300	1,940	1,860	2,800	1,860	2,900	1,600	2,400
Offices; Investment Non CBD	1-3 Storeys	GBP/m ²	960	1,220	1,460	1,920	1,240	1,860	1,200	1,500
Hotels; Multi-Storey	Five Star Rating	GBP/m ²	1,620	2,200	2,200	3,100	2,400	3,200	2,000	2,750
Hotels; Multi-Storey	Four Star Rating	GBP/m ²	1,120	1,780	1,580	2,350	1,960	2,550	1,400	2,200
Hotels; Multi-Storey	Three Star Rating	GBP/m ²	1,020	1,500	1,320	2,050	1,400	1,860	1,260	1,660
Hotels; Multi-Storey	Five Star Rating	GBP/Bedroom	112,500	225,000	152,500	320,000	155,000	307,500	140,000	280,000
Hotels; Multi-Storey	Four Star Rating	GBP/Bedroom	65,000	97,000	79,000	140,000	93,000	150,000	80,000	120,000
Hotels; Multi-Storey	Three Star Rating	GBP/Bedroom	32,750	68,000	42,750	92,000	51,000	98,000	40,500	84,000
Car Park	Open Deck; Multi-Storey	GBP/m ²	255	510	370	700	410	820	320	630
Car Park	Basement; Other	GBP/m ²	640	1,100	830	1,420	980	1,540	780	1,360
Car Park	Basement; Other Than CBD	GBP/m ²	490	970	670	1,320	880	1,240	610	1,200
Car Park	Undercroft; Other Than CBD	GBP/m ²	330	810	440	1,140	520	1,140	400	1,000
Car Park	Open Deck; Multi-Storey	GBP/Car	6,100	12,250	8,300	17,500	10,250	18,500	7,500	15,000
Car Park	Basement; CBD	GBP/Car	16,250	28,250	21,750	39,250	22,750	33,000	20,000	35,000
Car Park	Basement; Other Than CBD	GBP/Car	12,250	24,500	18,750	33,250	20,500	30,750	15,000	30,250
Car Park	Undercroft; Other Than CBD	GBP/Car	8,200	13,750	11,000	18,750	12,000	22,750	10,000	17,000
Industrial 6.0m to 17.5 Truss	4,500 m ² fl. Area; Metal Cladding	GBP/m ²	280	500	420	580	410	670	350	630
Industrial att./a/c offices 200m ²	200m ²	GBP/m ²	650	1,140	950	1,500	930	1,600	800	1,400

UK CONSTRUCTION COST DATA

Work Type	Description	Unit	Edinburgh		London		Manchester		Sheffield	
			Low	High	Low	High	Low	High	Low	High
Offices; Prestige	10-25 Storeys	GBP/m ²	1,800	2,550	2,700	3,500	2,100	2,750	2,050	3,450
Offices; Investment CBD	up to 10 Storeys	GBP/m ²	1,580	2,100	2,200	3,450	1,820	2,750	1,440	2,100
Offices; Investment CBD	10-25 Storeys	GBP/m ²	1,700	2,550	2,650	3,450	2,100	2,750	1,900	2,500
Offices; Investment Non CBD	1-3 Storeys	GBP/m ²	1,260	1,600	1,380	2,300	1,240	1,820	980	1,640
Hotels; Multi-Storey	Five Star Rating	GBP/m ²	2,100	2,900	2,800	3,800	2,300	3,100	2,050	3,200
Hotels; Multi-Storey	Four Star Rating	GBP/m ²	1,480	2,350	2,150	3,350	1,800	2,700	1,500	2,400
Hotels; Multi-Storey	Three Star Rating	GBP/m ²	1,340	1,960	1,900	2,450	1,540	1,900	1,260	1,680
Hotels; Multi-Storey	Five Star Rating	GBP/Bedroom	150,000	297,500	210,000	420,000	170,000	337,500	180,000	320,000
Hotels; Multi-Storey	Four Star Rating	GBP/Bedroom	85,000	127,500	120,000	180,000	96,000	145,000	100,000	200,000
Hotels; Multi-Storey	Three Star Rating	GBP/Bedroom	42,750	89,000	63,000	137,500	59,000	102,500	42,500	88,000
Car Park	Open Deck; Multi-Storey	GBP/m ²	340	670	460	910	560	720	330	980
Car Park	Basement; CBD	GBP/m ²	840	1,440	1,220	1,960	1,060	1,560	620	1,020
Car Park	Basement; Other Than CBD	GBP/m ²	640	1,200	1,060	1,860	1,000	1,460	640	1,300
Car Park	Undercroft; Other Than CBD	GBP/m ²	430	1,060	580	1,500	690	1,220	430	1,080
Car Park	Open Deck; Multi-Storey	GBP/Car	8,000	16,000	11,250	22,250	9,100	18,000	8,000	16,000
Car Park	Basement; CBD	GBP/Car	21,250	37,000	29,750	53,000	24,000	42,000	21,250	43,750
Car Park	Basement; Other Than CBD	GBP/Car	16,000	32,000	22,250	44,500	18,250	36,250	16,000	32,000
Car Park	Undercroft; Other Than CBD	GBP/Car	10,750	18,000	15,000	26,000	12,250	20,500	10,750	18,250
Industrial 6.0m to 17.5 Truss	4,500 m ² fl. Area; Metal Cladding	GBP/m ²	370	670	500	890	490	720	370	680
Industrial att./a/c offices 200m ²	200m ²	GBP/m ²	850	1,480	1,200	2,100	960	1,700	870	1,540

BUILDING COSTS

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff	
			Low	High	Low	High	Low	High	Low	High
Industrial, att./a/c offices; 400m ²	400m ²	GBP/m ²	570	1,060	870	1,460	820	1,540	700	1,300
Aged Care	Single Storey facility	GBP/m ²	970	1,460	1,300	2,000	1,540	2,300	1,200	1,800
Agree Hospitals;	Multi Storey facility	GBP/m ²	1,100	1,620	1,480	2,250	1,700	2,600	1,350	2,000
Private Hospitals;	45-60m ² floor area per bed	GBP/m ²	1,460	1,780	2,100	2,550	2,050	2,750	1,800	2,300
low Rise	55-80m ² floor area per bed;	GBP/m ²	1,620	2,450	2,350	3,400	2,600	3,600	2,000	3,050
low Rise	Major Operating Theatre	GBP/m ²	1,380	2,450	1,840	3,250	1,900	3,500	1,700	3,050
Retail; Regional Shopping Centres	Department Store	GBP/m ²	970	1,460	1,300	1,960	1,400	2,050	1,200	1,800
Retail; Regional Shopping Centres	Supermarket / Variety store	GBP/m ²	1,140	1,700	1,520	2,300	1,620	2,450	1,400	2,100
Retail; Regional Shopping Centres	Discount Department store	GBP/m ²	2,150	2,950	2,850	4,050	2,850	4,000	2,650	3,650
Retail; Regional Shopping Centres	Malls	GBP/m ²	1,220	1,780	1,660	2,500	1,720	2,550	1,500	2,200
Retail; Regional Shopping Centres	Speciality Shops	GBP/m ²	670	1,260	900	1,740	900	1,700	830	1,560
Residential; General	Small shops and Showrooms	GBP/m ²	610	800	830	1,240	990	1,340	750	1,000
Residential; General	Single and Double Storey	GBP/m ²	730	960	950	1,340	1,080	1,400	900	1,200
Residential; General	1 to 3 storey units; 85 -120m ² per unit	GBP/m ²	810	1,040	970	1,400	1,140	1,440	1,000	1,300
Residential; General	Townhouses; 90 -120m ² per unit	GBP/m ²	36,250	53,000	49,500	73,000	70,000	93,000	45,000	65,000
Residential; General	Single and Double Storey	GBP/House	61,000	102,500	81,000	165,000	88,000	170,000	75,000	140,000
Residential; General	1 to 3 storey units; 85 -120m ² per unit	GBP/Unit	69,000	120,000	88,000	170,000	99,000	170,000	85,000	150,000
Residential; General	Townhouses; 90 -120m ² per unit	GBP/Unit								

Work Type	Description	Unit	Edinburgh		London		Manchester		Sheffield	
			Low	High	Low	High	Low	High	Low	High
Industrial, att./a/c offices; 400m ²	400m ²	GBP/m ²	740	1,380	1,040	1,940	850	1,580	770	1,420
Agree	Single Storey facility	GBP/m ²	1,280	1,920	1,740	2,600	1,460	2,200	1,320	2,000
Private Hospitals;	Multi Storey facility	GBP/m ²	1,440	2,150	1,960	2,900	1,640	2,450	1,500	2,250
low Rise	45-60m ² floor area per bed	GBP/m ²	1,920	2,450	2,600	3,350	2,200	2,800	2,400	3,500
Private Hospitals;	55-80m ² floor area per bed;	GBP/m ²	2,150	3,200	2,900	4,350	2,450	3,650	3,400	4,500
low Rise	Major Operating Theatre	GBP/m ²	1,800	3,200	2,500	4,350	2,050	3,650	1,820	3,250
Retail; Regional Shopping Centres	Department Store	GBP/m ²	1,280	1,920	1,740	2,600	1,440	2,200	1,280	2,750
Retail; Regional Shopping Centres	Supermarket / Variety store	GBP/m ²	1,480	2,250	2,050	3,050	1,720	2,550	1,500	2,250
Retail; Regional Shopping Centres	Discount Department store	GBP/m ²	2,800	3,900	3,550	5,000	3,000	4,200	2,700	3,800
Retail; Regional Shopping Centres	Malls	GBP/m ²	1,600	2,350	2,200	3,200	1,820	2,650	1,600	2,400
Residential; General	Small shops and Showrooms	GBP/m ²	880	1,660	1,140	2,150	950	1,800	860	1,600
Residential; General	Single and Double Storey	GBP/m ²	800	1,060	1,380	1,660	910	1,220	810	1,080
Residential; General	1 to 3 storey units; 85 -120m ² per unit	GBP/m ²	950	1,280	1,360	2,050	1,080	1,460	870	1,420
Residential; General	Townhouses; 90 -120m ² per unit	GBP/m ²	1,060	1,380	1,380	1,900	1,220	1,580	1,080	1,460
Residential; General	Single and Double Storey	GBP/House	47,500	69,000	125,000	145,000	54,000	78,000	48,000	120,000
Residential; General	1 to 3 storey units; 85 -120m ² per unit	GBP/Unit	80,000	150,000	157,500	195,000	100,000	170,000	80,000	150,000
Residential; General	Townhouses; 90 -120m ² per unit	GBP/Unit	90,000	160,000	152,500	217,500	107,500	180,000	91,000	160,000

BUILDING COSTS

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff	
			Low	High	Low	High	Low	High	Low	High
Residential: Multi Storey Units	Up to 10 Storeys with lift: 60 -70m ² per unit	GBP/m ²	1,260	1,380	1,640	2,050	1,760	2,050	1,580	1,700
Residential: Multi Storey Units	Up to 10 Storeys with lift: 90 -120m ² per unit	GBP/m ²	1,380	1,780	1,660	2,300	1,860	2,550	1,700	2,200
Residential: Multi Storey Units	Up to 10 Storeys with lift: 60 -70m ² per unit	GBP/Unit	73,000	96,000	110,000	160,000	110,000	175,000	90,000	120,000
Residential: Multi Storey Units	Up to 10 Storeys with lift: 90 -120m ² per unit	GBP/Unit	122,500	200,000	177,500	325,000	175,000	307,500	150,000	250,000
Office Fit-Out	Insurance Offices; Government Departments; Open Planned	GBP/m ²	280	410	360	650	410	570	350	510
Office Fit-Out	Major Companies; Hotels; Open Planned	GBP/m ²	440	790	570	1,240	570	930	550	990
Office Fit-Out	Solicitors; Financiers; Open Planned	GBP/m ²	520	1,040	700	1,420	570	820	640	1,280
Office Fit-Out	Executive and Front of House; Open Planned	GBP/m ²	560	1,180	760	2,000	720	1,140	690	1,480
Workstations	Technical	GBP/Each	2,850	4,000	3,850	5,600	4,000	5,700	3,500	5,000
Workstations	Executive	GBP/Each	4,450	5,700	6,000	7,800	6,300	8,000	5,500	7,000
Hotel FF&E	Five Star Rating	GBP/Bedroom	16,250	36,000	6,400	13,500	6,400	13,500	6,000	12,250
Hotel FF&E	Four Star Rating	GBP/Bedroom	9,800	16,000	13,000	22,000	23,250	27,500	20,000	30,000
Hotel FF&E	Three Star Rating	GBP/Bedroom	6,500	9,600	8,700	13,500	9,200	13,750	12,000	20,000
Office Refurbishment	CBD Offices; Typical Floor	GBP/m ²	245	810	330	1,240	340	1,140	310	1,000
Recreational Facilities	Regional stadium	GBP/Seat	1,660	2,700	1,700	2,800	1,640	2,700	1,640	2,700
Recreational Facilities	Regional feature stadium	GBP/Seat	2,400	4,950	2,500	5,100	2,400	4,950	2,400	4,950

Work Type	Description	Unit	Edinburgh		London		Manchester		Sheffield	
			Low	High	Low	High	Low	High	Low	High
Residential: Multi Storey Units	Up to 10 Storeys with lift: 60 -70m ² per unit	GBP/m ²	1,660	1,800	2,550	4,400	1,760	2,100	1,600	1,820
Residential: Multi Storey Units	Up to 10 Storeys with lift: 90 -120m ² per unit	GBP/m ²	1,800	2,350	2,500	4,200	2,000	2,550	1,860	2,300
Residential: Multi Storey Units	Up to 10 Storeys with lift: 60 -70m ² per unit	GBP/Unit	95,000	127,500	212,500	367,500	120,000	145,000	96,000	130,000
Residential: Multi Storey Units	Up to 10 Storeys with lift: 90 -120m ² per unit	GBP/Unit	160,000	265,000	327,500	547,500	192,500	302,500	165,000	270,000
Office Fit-Out	Insurance Offices; Government Departments; Major Companies; Hotels; Open Planned	GBP/m ²	370	540	570	750	530	610	380	550
Office Fit-Out	Major Companies; Hotels; Open Planned	GBP/m ²	580	1,060	690	1,060	650	1,060	490	770
Office Fit-Out	Solicitors; Financiers; Open Planned	GBP/m ²	660	1,360	690	1,120	650	950	490	770
Office Fit-Out	Executive and Front of House; Open Planned	GBP/m ²	730	1,580	940	1,500	930	1,320	660	1,120
Workstations	Technical	GBP/Each	3,700	5,300	5,100	7,200	4,200	6,000	3,800	5,500
Workstations	Executive	GBP/Each	5,900	7,400	8,000	10,250	5,600	8,500	6,000	7,600
Hotel FF&E	Five Star Rating	GBP/Bedroom	16,400	36,750	6,700	14,500	7,200	14,500	6,500	8,250
Hotel FF&E	Four Star Rating	GBP/Bedroom	12,750	21,250	13,500	24,000	14,500	24,000	12,750	21,000
Hotel FF&E	Three Star Rating	GBP/Bedroom	8,500	13,000	12,900	31,000	14,500	24,000	12,750	21,000
Office Refurbishment	CBD Offices; Typical Floor	GBP/m ²	320	1,060	470	1,500	370	1,220	340	1,100
Recreational Facilities	Regional stadium	GBP/Seat	1,660	2,700	1,720	2,800	1,720	2,800	1,600	2,600
Recreational Facilities	Regional feature stadium	GBP/Seat	2,400	4,950	2,500	5,200	2,500	5,200	2,300	4,800
Recreational Facilities	National iconic stadium	GBP/Seat	4,350	8,000	4,500	8,300	4,500	8,300	4,200	7,700

UK CONSTRUCTION COST DATA

BUILDING COSTS

Work Type	Description	Unit	Belfast		Birmingham		Bristol		Cardiff	
			Low	High	Low	High	Low	High	Low	High
Recreational Facilities	National iconic stadium	GBP/Seat	4,400	8,000	4,350	8,400	4,350	7,900	4,350	7,900
Recreational Facilities	Indoor Arena	GBP/Seat	6,700	8,500	6,700	8,700	6,600	8,600	6,600	8,600
Recreational Facilities	Indoor Swimming pools - 50m (including dry sports facilities)	GBP/m ²	3,350	4,650	3,350	4,700	3,300	4,650	3,300	4,650
Site Works	Landscaping; Light, large areas, minimal planting	GBP/Hectare	24,000	97,000	33,000	140,000	53,000	157,500	30,250	120,000
Site Works	Landscaping; Dense shrubs, topsoil, grass	GBP/m ²	20	35	25	50	35	55	20	40
Site Works	Landscaping; grassing, large areas, minimal planting	GBP/m ²	5	10	10	15	15	25	5	10
Site Works	Car Parks on Ground; Light	GBP/Car	730	1,200	990	1,760	1,300	1,900	900	1,500
Site Works	Car Parks on Ground; Heavy Duty Paving	GBP/Car	1,220	2,000	1,500	2,800	2,150	3,150	1,500	2,500
Site Works	Car Parks on Ground; Light Duty Paving to Shopping Centre complex	GBP/Car	730	1,200	990	1,760	1,300	1,900	900	1,500
Site Works	Roads; asphalt incl. drainage and kerbs; Residential Estate 6.8m wide	GBP/m	570	1,200	760	1,760	900	1,860	700	1,500
Site Works	Roads; asphalt incl. drainage and kerbs; Industrial Estate 10.4m wide	GBP/m	810	1,600	1,120	2,400	1,300	2,550	1,000	2,000

UK CONSTRUCTION COST DATA

Work Type	Description	Unit	Edinburgh		London		Manchester		Sheffield	
			Low	High	Low	High	Low	High	Low	High
Recreational Facilities	Indoor Arena	GBP/Seat	6,600	8,600	6,900	8,900	6,900	8,900	6,400	8,300
Recreational Facilities	Indoor Swimming pools - 50m (including dry sports facilities)	GBP/m ²	3,300	4,650	3,450	4,850	3,400	4,850	3,200	4,500
Site Works	Landscaping; Light, large areas, minimal planting	GBP/hectare	32,000	127,500	43,250	180,000	36,250	145,000	32,000	127,500
Site Works	Landscaping; Dense shrubs, topsoil, grass	GBP/m ²	25	45	40	75	35	60	25	45
Site Works	Landscaping; grassing, large areas, minimal planting	GBP/m ²	10	15	15	25	15	25	5	15
Site Works	Car Parks on Ground; Light	GBP/Car	950	1,600	1,380	2,250	1,080	1,820	960	1,700
Site Works	Car Parks on Ground; Heavy Duty Paving	GBP/Car	1,600	2,650	2,250	3,700	1,820	3,000	1,600	2,650
Site Works	Car Parks on Ground; Light Duty Paving to Shopping Centre Complex	GBP/Car	950	1,600	1,380	2,300	1,080	1,820	960	1,600
Site Works	Roads; asphalt incl. drainage and kerbs; Residential Estate 6.8m wide	GBP/m	740	1,600	1,060	2,300	850	1,820	750	1,600
Site Works	Roads; asphalt incl. drainage and kerbs; Industrial Estate 10.4m wide	GBP/m	1,060	2,150	1,500	3,000	1,220	2,450	1,080	2,150

UK CONSTRUCTION COST DATA

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.

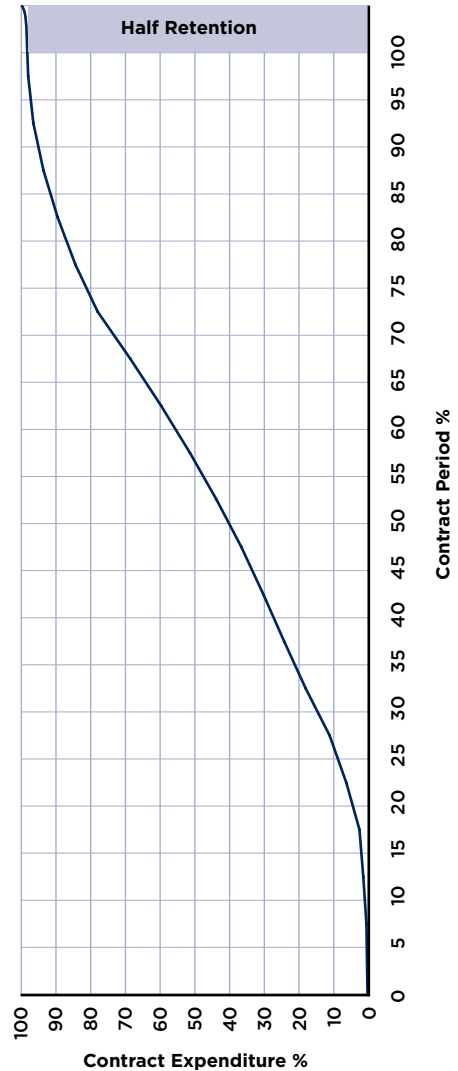
Construction periods exclude various extensions, including wet weather, industrial disputes, etc.

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 after end of defects period	100

UK CONSTRUCTION COST DATA



UK CONSTRUCTION COST DATA

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)	470	-	580 m ²
- Reinforced concrete slab on ground (Grade 35)	420	-	530 m ²
COLUMNS			
- Reinforced concrete (600 x 600mm Grade 35)	205	-	270 m
- Reinforced concrete (900 x 900mm Grade 35)	410	-	530 m
UPPER FLOORS (EXCLUDING BEAMS)			
- 150mm reinforced concrete suspended floor slab (Grade 35) on Holorib permanent formwork	61	-	88 m ²
- 150mm precast concrete suspended floor slab or beam and block floor with reinforced in situ concrete screed structural topping	87	-	108 m ²
- 200mm reinforced concrete suspended slab with high quality formwork for exposed finish	97	-	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	3,120	-	4,160 Rise

UK CONSTRUCTION COST DATA

Item	£		Unit
- 1200mm wide reinforced concrete stair with painted steel tube balustrade (average rise 3.70m) including two flights and one half space landing	4,150	-	5,190 Rise
- 2000mm wide grand public stair with glass and metal balustrade (4.00m rise) including three flights and two quarter space landings	12,310	-	18,470 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	-	470 m ²
- Glass curtain wall system, capped stick-built system	430	-	720 m ²
EXTERNAL DOORS (INCLUDING IRONMONGERY)			
- Single leaf solid core door	960	-	1,240 no.
- Double leaf glazed door	1,380	-	1,650 no.
- Double leaf automatic operating door	4,410	-	7,700 no.

UK CONSTRUCTION COST DATA

CONSTRUCTION ELEMENTS

Item	£		Unit
INTERIOR WALLS			
- 250mm reinforced concrete wall (Grade 35)	170	-	190 m ²
- 100mm block wall	25	-	31 m ²
- 140mm block wall	28	-	42 m ²
- Plasterboard metal stud wall, single layer each side	37	-	52 m ²
INTERNAL DOOR SET (INCLUDING IRONMONGERY)			
- Single leaf solid core flush door	460	-	780 no.
- Single leaf half hour fire door	510	-	840 no.
- Single leaf one hour fire door	620	-	990 no.
INTERIOR SCREENS			
- Laminated toilet partition	860	-	1,290 Each
- Fully glazed office partition full (2.8m) height, frameless joints			
Single glazed	310	-	520 m
Double glazed	930	-	1,150 m
WALL FINISHES			
- Plaster and emulsion paint	16	-	22 m ²
- Plaster and vinyl fabric wallpaper	21	-	36 m ²
- Cement render and ceramic tile	61	-	98 m ²
- Granite tiles	102	-	160 m ²

UK CONSTRUCTION COST DATA

Item	£		Unit
CEILING FINISHES			
- Metal framed plasterboard ceiling, painted	27	-	33 m ²
- Exposed grid suspended ceiling with mineral fibre board acoustic ceiling	26	-	36 m ²
- Hygienic suspended ceiling system	30	-	42 m ²
FLOOR FINISHES			
- Carpet tile	18	-	39 m ²
- Ceramic tile	46	-	88 m ²
- Raised Access floors, standard duty	32	-	47 m ²
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 m ²
SERVICES - VERTICAL TRANSPORTATION			
- Glass sided escalator (4m rise)	64,000	-	81,000 no.
- 13 passenger lift serving 4 floors	52,000	-	64,000 no.
- Hydraulic lift serving 2 floors	25,600	-	38,000 no.

THE PORTER BUILDING
SLOUGH, UK

First building in the UK to achieve WELL Certification



ESTIMATING DATA

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ESTIMATING DATA

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	✗	✗	✓

ESTIMATING DATA

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/m ³
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.

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.

Note from the 1st January 2016 a RICS Professional Statement (PS)² 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.

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) effective from 1st January 2016 which affects the measurement of offices. Identified changes are highlighted in Red.

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

ESTIMATING DATA

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
Internal balconies	Open light wells upper level voids of an atrium - definition added in PS 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	

ESTIMATING DATA

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
Internal balconies also called covered galleries are included but must be stated separately as different interpretations may have been applied regarding their inclusion	Open light wells upper level voids of an atrium - definition added in PS 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

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) effective from 1st January 2016 which affects the measurement of offices. Identified changes are highlighted in Red.

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

ESTIMATING DATA

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

ESTIMATING DATA

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

ESTIMATING DATA

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	

ESTIMATING DATA

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) effective from 1st January 2016 which affects the measurement of offices. Identified changes are highlighted in Red.

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: RICS³

ESTIMATING DATA

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

THE CHARTER BUILDING
UXBRIDGE, UK

22,000m² of office space in the heart of Uxbridge



Credit: Jack Hobhouse

CONSTRUCTION INSIGHTS

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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 straight forward 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		Identify client's Business Case and Strategic Brief and other core project requirements.
Strategic Definition		
1		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.
Preparation and Brief		
2		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.
Concept Design		
3		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.
Developed Design		
4		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.
Technical Design		
5		Off-site manufacturing and on-site Construction in accordance with Construction Programme and resolution of Design Queries from site as they arise.
Construction		
6		Handover of building and conclusion of Building Contract.
Handover and Close Out		
7		Undertake In Use services in accordance with Schedule of Services.
In Use		

CONSTRUCTION INSIGHTS

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 1st January 2018 until the end of 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	£589,148 €750,000
Other contracting authorities	£181,202 €221,000	£4,551,413 €5,548,000	£589,148 €750,000
Small Lots	£65,630 €80,000	£820,370 €1,000,000	N/A
Different Thresholds / Exempt	<ul style="list-style-type: none"> 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). 	<ul style="list-style-type: none"> With the exception of subsidised works contracts specified under Article 13. 	<ul style="list-style-type: none"> Services are listed in Annex XIV of Article 74 of Directive 2014/24/EU

CONSTRUCTION INSIGHTS

** 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 - For the first time 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)

CONSTRUCTION INSIGHTS

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

CONSTRUCTION INSIGHTS

FRAMEWORKS

Rider Levett Bucknall is appointed to a comprehensive suite of procurement frameworks, offering bespoke solutions to the public and private sector.

Within the public sector, key framework appointments include the CCS Project Management and Full Design Team Services framework and the NHS SBS Construction Consultancy Services framework, where we are delivering significant commissions for organisations across the public sector.

Key benefits of these frameworks include:

- Access to separate specialist services or an integrated solution tailored to customer requirements
- Capacity and capability to deliver consistently across the UK
- Speed to market and ease of appointment, removing the need for customers to initiate procurement exercises
- Ability to make a direct appointment to access independent consultancy advice whilst achieving maximum commercial value
- Fully compliant with procurement regulations, providing certainty and control for customers
- Maximise value and deliver cost, quality, time and community benefits

We would welcome the opportunity to discuss possible procurement routes.

Please get in touch:

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UNIVERSITY OF LEICESTER HOSPITALS - NEW EMERGENCY DEPARTMENT LEICESTER, UK

Enabling improved facilities for
tomorrow's healthcare



PROCURE FOR BETTER VALUE

Construction matters. 10% of the UK workforce is employed in construction and allied supply industries.

Construction regularly comes under a critical spotlight and it is unequivocal that productivity improvements in the sector have fallen short of most other sectors in the UK economy. Over the past four years the Government has developed a number of strategies and proposals to improve the sector, and some improvements have been made, but there is a systematic lack of “joined-up” action within the industry – on both the client and supply sides.

Productivity of construction projects in the UK is very variable, up to 30 percent better or worse than average. This variability far exceeds the gap between the UK and other countries. Similarly in the general economy, the most productive area of the UK is now almost three times more productive than the least. The potential prize is huge. Simply bringing the whole industry up to the current average UK productivity level would lead to £16bn savings per annum.

Add on to that whole-life efficiency, economies of scale, quality and health and safety improvements delivered through standardisation and pre-manufacture, and the opportunities that digital technologies present for changing the fundamental structure of the industry and it can be seen that the industry is on the cusp of structural change.

RLB is playing its part in this structural change – through the Construction Leadership Council’s Procuring for Value project.

By procuring with different outcomes in mind, clients can direct the industry to work more efficiently and effectively, thus delivering higher productivity and better outcomes for end users.

PROCURING FOR VALUE - OUTCOME BASED PROCUREMENT

To achieve better value we are establishing models of value which are broader than capital cost.

Our approach to procurement enables clients to put a real-time financial value onto outcomes that are more traditionally measured in qualitative terms. This means that clients can take into account factors beyond just short-term cost when assessing suppliers and can determine what really adds value to a scheme or project. This is a particularly useful tool in assessing alternative bids, or when a client wants to achieve particular outcomes – well beyond the construction of an asset – from their investment.

Best practice procurement guidance already exists from a whole range of public sector and regulated bodies, but these lack consistency. Our approach gives clients a robust footing from which they can achieve the maximum benefit from projects or programmes, by expanding the definition and assessment of value to include elements such as:

- Whole-life value
- Capital and Operational Carbon Emissions
- Digital effectiveness, BIM and data capture
- Use of standard components and pre-manufactured value
- Design Quality Indicators
- Collaborative behaviour and supply-chain integration
- Government Soft Landings
- Social Value of the construction process
- Health, Safety and Wellbeing during construction
- R&D and Innovation
- Supply chain incentivisation
- Sharing of innovation risk between client and suppliers

None of these are new themes, but are very rarely captured within the procurement process.

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Click here to read about procurement, and much more, in RLB’s Perspective magazine

CONSTRUCTION INSIGHTS

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.

We 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.

Please get in touch:

Russell Lloyd
National Head of Cost Management

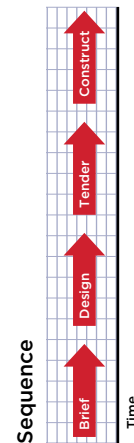
e. russell.lloyd@uk.rlb.com

t. +44 207 398 8300



- 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

- 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



KEY

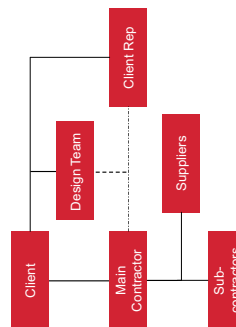
Contractual Line



Communication Line



TRADITIONAL LUMP SUM

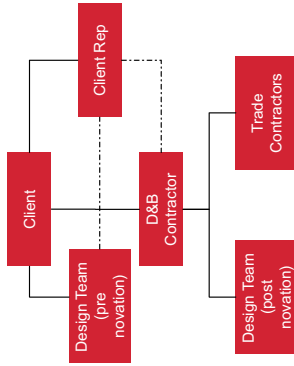


Key Features

- 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

PROCUREMENT OPTIONS

DESIGN & BUILD

**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)

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

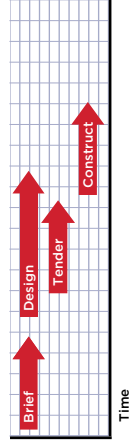
Advantages

- 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 – Employers' 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

Sequence



Time

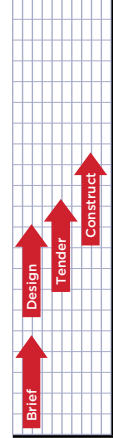
Advantages

- 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 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

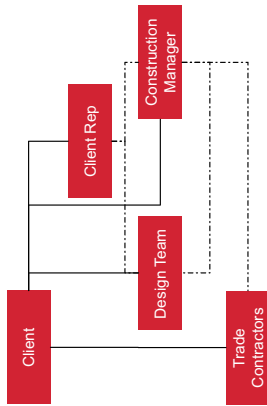
Sequence



Time

CONSTRUCTION INSIGHTS PROCUREMENT OPTIONS

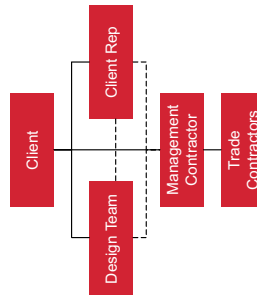
CONSTRUCTION MANAGEMENT



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

MANAGEMENT CONTRACTING



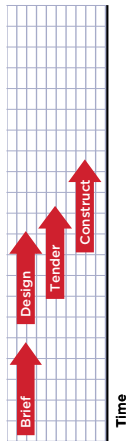
Key Features

- 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
- 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 (inc 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

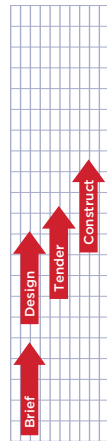
Sequence



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 (inc 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

Sequence



Concerns / Considerations

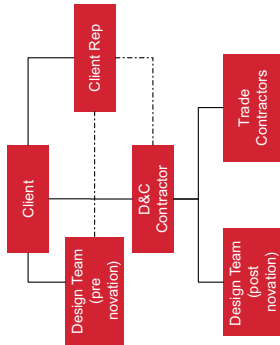
- Client takes programme and cost risk
- Lack of cost certainty for Client
- Potential 'post box' scenario
- Requires higher degree of Client involvement
- No single point of responsibility
- Not as much supply chain interface and transparency

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

CONSTRUCTION INSIGHTS PROCUREMENT OPTIONS

DEVELOP & CONSTRUCT



Key Features

- Main Contractor (MC) appointed early (at Stage C or D)
- 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 on&p / prelims – Pre-construction agreement required

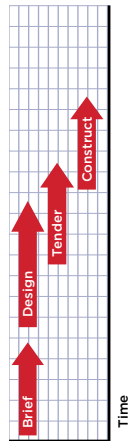
Concerns / Considerations

- 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

Advantages

- Integration of design and construction through collaborative approach
- Overlapping of design and procurement and the risk of un-priced design development
- Quicker overall process
- Progressive co-ordination of design with the early integration of specialist contractors

Sequence



CONSTRUCTION INSIGHTS PROJECT BANK ACCOUNTS

Poor payment practices and contractor insolvency are a common problem in the UK construction industry. Carillion’s collapse and the ensuing damage caused to clients and to the supply chain is a stark demonstration of how badly things can go wrong.

RLB’s position is that the impact could have been less catastrophic if clients had been aware of and used project bank accounts and that moving forward the use of project bank accounts should be increased.

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:

- RLB 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
- RLB was appointed by OGC to support the development of the “Guide to Best ‘Fair Payment’ Practices”
- RLB acted as advisors to Barclays and Bank of Scotland in the development of their PBA products
- RLB has worked with the authors of NEC3, PPC2000 and JCT to develop PBA supplements
- RLB now advises clients in all sectors on the adoption and use of Project Bank Accounts for their projects or work programmes

WHY DO MANY CONSTRUCTION CONTRACTS RESULT IN DISPUTE?

The construction industry is known for its disputes, with the National Construction Contracts and Law Survey 2015 quoting “disagreements over the value of final accounts and extension of time on projects cited as the most common headaches”.⁶

Many disputes in the construction industry arise from improper contract administration caused by lack of clarity, understanding and interpretation of contractual obligations, or not having followed the due contractual process. Such uncertainty creates a lack of trust between the parties, and parties protecting their position; which inevitably leads to disagreements and disputes.

The construction industry continues to suffer from this lack of trust and the historically adversarial nature of contracts has not helped this situation.

The advent of collaborative forms of contracts, encouraging active engagement between the parties from an early stage rather than the ‘silo mentality’, has assisted parties to effectively work together to mitigate disputes.

It is also important, however, to invest the time and effort in the early stages to appropriately define not only the scope but constraints, coordination, integration and reporting requirements and, thereafter, to allocate the appropriate contract management to successfully deliver the requirements of the contract.

Procurement and contract strategies clearly need to be looked at against delivery capabilities and personnel up-skilling; or the procurement and contract strategies be revised to suit.

Different forms of contract will require different capabilities. One cannot expect to apply the same principles of an Employer’s Agent under the JCT Design & Build form of contract compared to the Project Manager under the NEC form of contract. They are entirely different and if clients, consultants and contractors approached all contracts in the same manner then it could lead to a dispute.

Clients and contractors need to accept that the lowest price will not necessarily provide the required outcomes and much more thought needs to go into the understanding of how consultants, contractors and the supply chain will deliver each of their objectives.

Moving into the delivery phase, parties have heavily invested in setting up the contracts, so why would you want to lock it up in a drawer collecting dust? The contract should be the vehicle through which the project is delivered. This means that all key parties to the project should have a good and clear understanding of their obligations under their respective agreements.

In summary, there has to be an acceptance that the construction industry needs to continue to evolve and embrace change which will require a continuing cultural change within the industry to breakdown the past perception and barriers to progress and advance.

Rider Levett Bucknall provides advice on:

- Specialist Procurement and formulation of contracts
- Dispute Avoidance
- Dispute Resolution
- Expert Witness.

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Click here to discover more construction insights in RLB’s Perspective magazine

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"; hence the "I" in BIM 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 (e.g. a door) has information embedded/attributed to it e.g. weight, colour, size, etc.

The information attributed to the objects can be accessed and re-used by other parties, allowing other parties to re-use the common information. This facilitates collaboration, greater efficiency 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

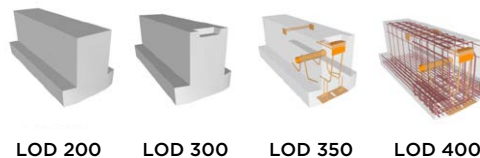
- Common models are not shared between project team members
- Level 2 - This is distinguished by collaborative working - all parties produce their own BIM files independently. Information is exchanged between different parties through a common file format, which enables any organisation to be able to 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 that 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](#)⁷

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](#)⁸



LOD 200

LOD 300

LOD 350

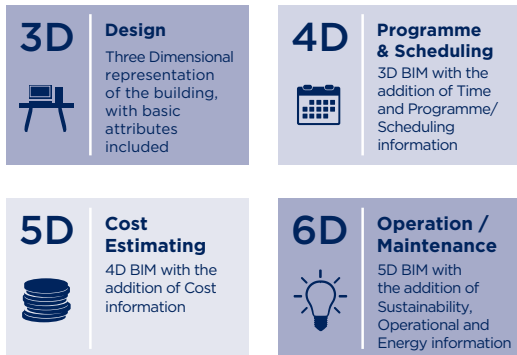
LOD 400

CONSTRUCTION INSIGHTS

BUILDING INFORMATION
MODELLING (BIM)

BIM DIMENSIONS

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



RLB AND BIM

RLB has successfully been working 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 forum 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 reuse data and query data
- Developing our own BIM Protocols, ensuring consistency of approach, training and best practice

CONSTRUCTION INSIGHTS

GOVERNMENT SOFT
LANDINGS (GSL)

Rider Levett Bucknall is delivering numerous projects utilising Government Soft Landings.

GSL's aim is "to champion better outcomes for our built assets during the design and construction stages through GSL powered by a Building Information Model (BIM) to ensure that value is achieved in the operational life-cycle of an asset" (BIM Task Group).⁹

The key is that by understanding customer needs at the commencement of a project, better outcomes are achieved for the eventual user of the building.

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.

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

MASONRY AND TIMBER - COST COMPARISON

Which is the more economical way to build housing: timber frame or masonry?

This question has been posed by many people and organisations within the construction industry for years. As both construction techniques are widely used throughout the UK industry, albeit masonry more prevalent in England and Wales, it can be assumed that there is not much between the two. If one was more expensive than the other, its use would not be so prevalent.

We would assume it is a simple question to answer, but the more in depth you look the more multifaceted the answer becomes. RLB has discussed with contractors in the past about their build preferences, some preferring timber, some preferring masonry. Indeed tenders returned over the years have had similar differences, some offering a timber structural solution, some masonry, for the same project but with the overall tender price being very comparable.

Comparing the two build methods is complex as the structures, procurement models and site operations are different. Masonry construction, in general terms, constitutes separate supply chain members and then site assembly of the constituent parts (walls, floors, roof trusses) whereas with timber frame the off-site manufacturer usually designs, manufactures, delivers and erects the whole structural shell of the home, including the roof structure.

RLB completed this independent study during the 1Q 2018, with funding from Swedish Wood, with the overall costs in the summary overleaf.

The model used is an affordable housing design comprising several terraces creating a total number of 32 dwellings and are built to the current edition of the Building Regulations in England. The study compared the buildings only, with the external works and utility services excluded at this stage as these will be very much site specific in their content, works and any abnormal or risk areas, and will be the same cost regardless of superstructure construction method.

In our experience the costs related to all forms of housing construction, at any one time, depend on:

- Experience
- Availability of resources
- Organisations commercial position
- Market situation – national and local
- Site specific constraints and risks

Elements	Timber Frame		Masonry	
	Mid terrace (£)	End terrace (£)	Mid terrace (£)	End terrace (£)
Sub-structure	13,694.52	16,386.15	14,544.76	17,139.28
Super-structure	45,459.16	54,241.09	43,895.85	54,874.79
Finishes	7,975.80	7,949.15	8,754.35	7,978.43
Fixtures and fittings	8,700.47	8,700.47	8,700.47	8,700.47
Services	14,533.46	14,533.46	14,824.85	14,824.85
Sub totals	90,363.41	101,810.32	90,720.28	103,517.82
Number of units - 16nr each	1,445,814.53	1,628,965.20	1,451,524.52	1,656,285.07
Total Construction Works	3,074,779.73		3,107,809.59	
Preliminaries	269,303.36		329,349.52	
Totals	3,344,083.09		3,437,159.12	
Cost / m²	1,148.38		1,180.34	
Cost / Unit	104,502.60		107,411.22	
Programme	41 weeks		49 weeks	

Construction cost saving	1.1%
Overall cost saving	2.8%
Programme saving	19.5%

We are mindful this study is taken at a point in time and we are aware that the market conditions, commercial matters of companies and the overall economic climate can affect the pricing levels.

The full report is now available and can be downloaded from RLB.com

THE DRIVERS OF DATA CENTRE GROWTH

Over the past 12 years RLB has been involved in the construction of 820MW of data centre IT load on more than 200 projects worldwide.

Our longevity and diversity of projects has placed us at the vanguard of data centre cost management and has led us to develop industry leading processes to rapidly process design information and provide our clients with early, accurate costs to enable them to plan their deployment strategies and financing.

However, it is only recently that the hyperscale market has precipitated a sea of change in the scale of developments. Although these projects often employ similar engineering architectures to their developer-led wholesale or colocation equivalents, they respond to the need for massively scalable, modular and secure computer environments.

All data centres face the challenge of dealing with huge server heat loads and this has seen the industry responding with innovative design and logistical solutions. We have therefore found ourselves operating more frequently in diverse locations such as Denmark, Finland and the Netherlands, where cooler climates allow free cooling solutions, thus increasing energy efficiency and revenue.

Hyperscale data centres represent over a third of the overall IT load we have delivered in the data centre sector; and yet less than one tenth of the number of projects, such is their scale.

There is estimated to be 490 hyperscale data centres constructed by the end of 2020, with spending on cloud data centres rising from \$38 billion in 2015 to reach nearly \$75 billion in 2020.¹⁰

The Cloud has been fuelled by a relentless growth in Big Data, the Internet of Things (IoT) and Open Source Architecture, all of which may be interrelated but see the major hyperscale data centre operators working with them to best suit their particular market strengths. So what are they?

BIG DATA

Science, for example, increasingly produces, analyses and uses Big Data to solve global (and local) healthcare issues and enhance human knowledge. To illustrate the advancements in data capture and analysis: Decoding of the human genome originally took ten years to process; now it could be achieved in less than a day.

THE INTERNET OF THINGS (IOT)

Forbes has defined the IoT as “the connection of any device with an on and off switch to the Internet (and/or to each other)”.¹¹ The implications to the data centre – rapid increases in data transmission, storage and analytics requiring more facilities to process them.

OPEN SOURCE ARCHITECTURE

Companies have increasingly seen the Cloud as a preferable option to upgrading or renewing their private IT environments, seeing advantages such as access to up-to-date software applications, improved performance, security and technical expertise. The hyperscale data centre picks up on this because the open source software that has been developed to run them is available for other organisations to access and develop for their own needs, resulting in improved operational efficiency.

Perhaps the development of ever-faster processors or even major technology hikes such as quantum computing will result in a radical redeployment of our processing capacity and a re-think of construction activity, but data growth appears to be spiralling upward and the resulting increase in construction output looks set to continue for a few years yet.

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Click here to read about data centre growth, and much more, in RLB's Perspective magazine

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.

The public sector is being driven by various government pressures, initiatives, reviews and reports.

Private sector businesses are under increasing pressure to increase productivity and maintain profit levels through more efficiency in an increasingly competitive global market. Whether delivering goods or services the facilities should be matched to the process and 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 to starting the journey ranging from a lack of funding through to a fear of failure. An in-house estates team may lack the necessary 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 and procrastination. Investing in change today to realise savings over a longer period also adds to the mystery that means 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 the opportunities for our customers.

FUSION – BLYTHE VALLEY PARK MIDLANDS, UK

Two phases of development on a mixed use site



www.blythevalleypark.co.uk

PLANNING FOR HEALTH

Rider Levett Bucknall works on healthcare projects globally and is currently working on over 60 projects in the UK each year.

Aligning our international experience gives us the opportunity to consider the key demand drivers of the sector, which in turn provides the lessons learned on improving project and health outcomes in the industry.

The health industry has similar themes worldwide:

- Demographic and population increases
- Chronic disease management and lifestyle illnesses
- Technological and big data applications
- Government requirement for lower operating costs of the system - “more for less agenda”
- Pharmacology and continuous clinical change
- Increasingly larger health organisations integrating via Accountable Care Principles
- Regulation via Accreditation regimes

Projects have to look at balancing the needs of these major trends. When health organisations look at new projects, they tend to focus on the difficulties at activity forecasting, building design and construction and fail to note that many adverse outcomes occur at the project commencement.

Structuring a Project - All projects should start with a Project Initiation Document that makes clear the purpose, scope and deliverables so communication and deliverables are understood by all.

Better and leaner processes - Looking at both the integration of building facility products and processes with performance standards should lead to better operating costs.

Sustainability Implications - In the past health projects looked at the building fabric and lifestyle. Now it is about achieving a sustainable system improving clinical quality and increasingly the manner in that the health system can deliver operational services.

A radical focus on asset and design management to reduce revenue - Health organisations need to focus on grouping activities together so that future staff, equipment and rooms are all allocated in a flexible manner. This cuts against the medical model, but is essential to reduce unused space, reduce risk and maximise staff.

Improving clinical care audit & achieving greater collaboration between health and social care agencies - We are moving to an era of Integrated Care. Empower key workers to sort patient problems whether linked to the design of the home, access to rehabilitation or community care.

Change public behaviours via health education - We have to improve health education - too often emergency services and paramedics are required to deal with social issues. Education needs to be harder hitting.

In summary, a more holistic approach looking at global issues but complementing them with local priorities is the challenge for healthcare staff. Our global experience and understanding highlights that what is paramount for every new build or refurbishment is the ability to optimise cost, meet the requirements of regulatory bodies and drive safety while ensuring the project is well planned and efficiently delivered.

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Click here to read about planning for health, and much more, in RLB's Perspective magazine

INTRODUCTION

Changes within the construction industry and government pressure have resulted in sustainability being placed increasingly high 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:

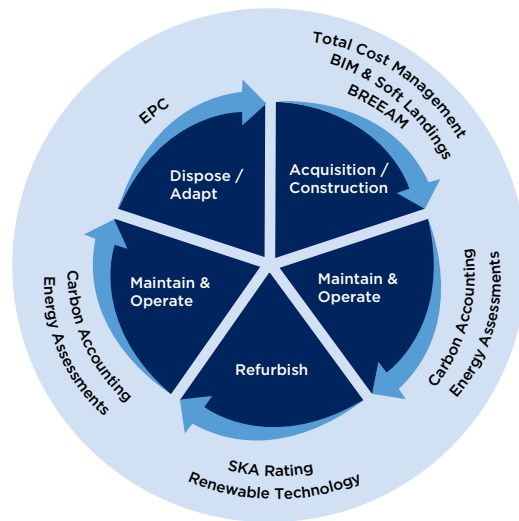
- Asset value: increased marketability, ability to command greater rental premiums and higher sale prices
- Operating costs: reduced costs (up to 30% lower) through reduced energy and water consumption, lower long-term operation and maintenance costs
- Wellbeing: sustainable buildings improve productivity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

Recognising the increasing awareness of the construction industry, we have developed a suite of Sustainability Services to assist 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.

WHOLE ESTATE LIFE-CYCLE



CONSTRUCTION INSIGHTS

SKA RATING

The fit-out and refurbishment of a new or existing property represents a valuable opportunity for an asset owner to make significant environmental and cost savings. SKA rating is an environmental assessment tool for sustainable fit-outs. Operated by RICS, SKA rating offers a credible, established alternative to BREEAM for benchmarking sustainability. SKA can be applied to any refurbishment or fit-out project.



RLB certified Arup's new offices in Sheffield, which achieved a coveted SKA Offices Gold Rating

Communicated through a Bronze, Silver, Gold rating system, projects are rewarded for addressing elements applicable to the project, and the assessment refrains from penalising schemes for elements that are outside of the scheme's control, including the base build.

SKA measures a number of impacts including energy and Carbon Dioxide (CO₂) emissions, waste, water, materials, pollution, wellbeing and transport.

To secure a SKA 'Gold' Rating the building has to achieve a score of at least 75% across all identified Good Practice Measures within the project scope.

Assessments are made at three stages; design, handover and occupancy. The latter involves reassessment one year on from handover and certification; it is considered best practice as it allows comparison of improvements against previous 'in-use' analysis.

CONSTRUCTION INSIGHTS

DEVELOPING SKA HIGHER EDUCATION

As Development Partners on the SKA Higher Education scheme with RICS, RLB was involved in shaping and developing the rating criteria. Since the release of the scheme mid-2016, we have certified the first three Higher Education rated projects in the UK and are involved in assessing a range of projects nationally.

Our track record in the Education sector is extensive, and we have assisted universities with writing SKA Ratings into Estate Strategies, Design Guides and Environmental Principles. This enables universities to embrace SKA across their estates; allowing not only for benchmarking ability but also allowing SKA principles to be incorporated into projects which are not formally SKA assessed.



RLB certified the first SKA HE Gold rated project in the UK for UCL's St Martin's le Grand project.

"Delivering a sustainable estate is a key part of UCL's 20-year institutional strategy and assessment tools like SKA HE are essential for managing and measuring our progress. As contributors to the new SKA HE scheme, we're delighted to have also achieved the first Gold rating which was managed and assessed by sustainability experts at Rider Levett Bucknall and Overbury. This helps us demonstrate exemplary building performance in a number of key areas including energy, materials, water consumption and waste management."

Ben Stubbs, Sustainability Manager, UCL

BREEAM

NEW CONSTRUCTION

BREEAM New Construction 2014 was recently replaced by BREEAM NC 2018, released mid-March 2018 after an extensive consultation period. The new standard heralds some significant changes to bring the scheme up to date against industry improvements including a new verification change, and re-evaluation of awarding credits in several categories. The deadline has now passed for registering schemes against the 2014 version, unless there is a written contractual obligation to satisfy funding/planning conditions, when it may be possible to assess against the 2014 version.

A BREEAM assessment focuses on sustainable value across a range of categories:

- Management – Effectiveness of building operation
- Health & Wellbeing – Internal air quality, thermal comfort, acoustics and occupant control
- Energy – Operational energy consumption, CO₂ emissions and energy efficiency
- Transport – Sustainable transport options and accessibility to local amenities
- Water – Water consumption, monitoring and leak detection
- Materials – Environmental implications of material selection and long-term durability
- Waste – Waste management issues through construction to building occupation
- Land Use and Ecology – Consideration of location and associated impacts
- Pollution – Air, water, light and noise pollution issues

Each category focuses on the most influential factors, including reduced carbon emissions, low impact design, adaption to climate change, ecological value and biodiversity protection.

REFURBISHMENT AND FIT-OUT (RFO)

BREEAM's previous monopoly within the fit-out sector ended with the release of SKA Ratings, which was followed by BRE releasing the RFO scheme in 2014.

The new four part system that BREEAM RFO employs allows for greater flexibility; one of the main criticisms of earlier schemes was lack of flexibility.

Additionally, there was a substantial rise in benchmarks due to improved industry benchmarks available since 2008, when the previous BREEAM update was released. RLB has noticed a trend towards CAT A space requiring a BREEAM rating, but with SKA increasingly competing as a more flexible alternative.

Construction update: Environmental Legislation

RLB is able to advise customers by keeping up to date with relevant environmental and sustainability legislation.

ENERGY PERFORMANCE CERTIFICATES (EPC) / DISPLAY ENERGY CERTIFICATES (DEC)

EPCs are used to provide information on a buildings energy use and carbon dioxide (CO₂) emissions. They also include a recommendation report giving advice on how to reduce energy consumption and carbon emissions.

The rating measures the energy and CO₂ efficiency of a property using a sliding scale from 'A' (very efficient) to 'G' (least efficient). All properties of the same type are measured using the same calculation, allowing for a comparison of energy efficiency.

A **DEC** shows the energy consumption of a building, the Operational Rating, and its efficiency compared with other buildings, based on results from gas, electricity and other fuel meters. DEC's are accompanied by an Advisory Report that lists cost effective measures to improve the energy rating.

DEC's are now required where the total usable floor area of the building exceeds 250m² which is occupied in whole or in part by public authorities and frequently visited by the public. DEC's last for 10 years where the floor area is 250-1,000m².

CONSTRUCTION INSIGHTS

MINIMUM ENERGY EFFICIENCY STANDARD (MEES)

From April 2018 it will be unlawful to rent or lease a commercial property with an EPC rating below an E.

HOW RLB CAN HELP

- Advise on implications of the legislation
- Produce up to date Energy Performance Certificates
- Discuss the upgrades available to your property
- Find suitable contractors through tendering
- Oversee the works carried out
- Provide a new EPC after upgrades demonstrating compliance

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 31st December 2018 is the qualification date for phase 2 of the ESOS scheme. Those already subject to ESOS need to check whether they still meet the qualification criteria. Likewise, those who did not meet the qualification criteria in December 2014 must assess if they meet the criteria now.

ESOS phase 2 will require an organisation to:

- Measure their total energy consumption
- Conduct audits to identify cost effective energy efficiency opportunities
- Report compliance to their national scheme administrator

CONSTRUCTION INSIGHTS

THE GREAT REPEAL BILL

The European Communities Act 1972 will be repealed on the day the UK exits from the EU according to the Bill. Any EU derived legislation which has an effect on UK domestic law immediately before the day the UK leaves the EU, will continue to have effect in domestic law on and after the exit day. It is not yet confirmed, but some predicted outcomes could result in:

- Little change because the UK still has to apply most EU environmental laws.

This would occur if the UK were to stay within the European Economic Area. This would mean that the UK would have little influence over the content of new EU environmental laws.

- Keeping things the way they are.

The UK may choose to retain some of the EU environmental laws because these standards will need to be met by business and organisations wanting to trade with other UK countries.

- Developing the UK's own environmental laws and policies.

The UK may choose to scrap certain environmental laws or protections and make tighter, more effective environmental targets/legislation because they are considered as barriers.

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 key areas the UK has pledged to tackle are:

- Clean air
- Clean and plentiful water
- Using resources from nature more sustainably
- Minimising waste
- Reducing risk from environmental hazards

HEALTHY WORKPLACE, HEALTHY WORKFORCE

What could be better than a healthy, happy place to work?

There is a growing recognition of the importance of wellbeing within the workplace, as both employers and employees realise the advantages of a positive working environment.

The benefits are well-known; improved staff morale leading to reduced staff turnover and absenteeism, increased productivity and the creation of 'happy' workplaces. But what does wellbeing actually mean, and can health, wellbeing and sustainability create a perfect workplace?

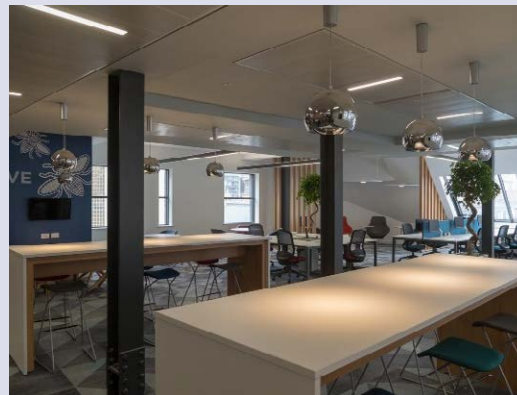
Wellbeing concerns physical, social and mental health. There are numerous factors which may impact wellbeing, many of which can be directly influenced through building design and operational control. For example, designing spaces flexible enough for staff to influence their own working environment; from natural daylight and ventilation to engaging interior décor.

Sustainable buildings and wellbeing principles have a mutually beneficial relationship. The creation of buildings which respond to occupant needs, particularly through multi-functional, flexible spaces result in more productive utilisation and extension of their operational life.

In a competitive market, employers are searching for differentiators to appeal to current and potential staff. By demonstrating concern for employee welfare, businesses are able to attract and retain talent. With the average annual cost of absence standing at £554 per employee¹², ensuring work environments are considered healthy, enjoyable places to work is increasingly becoming a key priority.

At RLB we have seen a recent shift towards both new build and refurbishment schemes incorporating wellbeing principles, from standards such as WELL and SKA Ratings. We have delivered projects which have seen a dramatic 44% reduction in staff churn through the introduction of bespoke, responsive and sustainable design.

Businesses which respond proactively to the demand for attractive, sustainable workspaces will profit from a profile which demonstrates a trendsetting approach to improving staff wellbeing – and should reap the benefit of a productive, happy and healthy workforce.



RLB's new Manchester office fit-out, located at 1 King Street. The office has been designed to encourage flexible working, with break-out areas and space to accommodate collaborative working. Sustainability and environmental considerations have been a priority and the fit-out has been designed to achieve a SKA Gold Rating.

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Click here to discover more construction insights in RLB's Perspective magazine

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) Approximately 20 years
Building mounted 'micro wind'	B	G	Feed in Tariffs do not always qualify for these units Planning Approval	£1250 - £4300 per kW for schemes up to 2kW	Approximately 20 years
Standard photovoltaic panels (poly and mono crystalline panels)	B	H	Available roof space	Larger schemes £1400 - £1800 per kWp (£200-£260 per m ²) Smaller domestic schemes £1600 - £1900 per kWp (£300 - £440 per m ²)	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	

Renewable technology	Candidate buildings	Pre-requisites	Potential barriers	Approximate Capital Cost	Payback Period
Passive solar water heating	D	J	None	£850 - £1200 per m ² (costs increase for the smaller schemes. Increase to £1000 - £1600 for schemes with panel area less than 8m ²)	Over 25 years
Ground source heat pump	B	K	Ground condition survey required. Depends on open loop or closed loop system, and horizontal or vertical collectors Site space for horizontal connectors	Generally £1500 per kW including ground pipes in long shallow trenches and £2000 per kW including ground pipes within deep vertical boreholes. As the duty of the system increases past 150kW then reduce by 20%. If duty smaller than 10kW then increase by 40%	Over 20 years

RENEWABLE TECHNOLOGIES: APPLICATION AND COST DATA

Renewable technology	Candidate buildings	Pre-requisites	Potential barriers	Approximate Capital Cost	Payback Period
Air source heat pump	D	L	Low temperatures provide a poor Coefficient of Performance – only appropriate for low and constant heat supply. Free space from atmosphere / sufficient airflow required	£800 - 1200 per kW	8-12 years
CHP	E	L, M	Environmental impact Maintenance costs Grant funding for gas CHP	£1500 - £3000 per kW For smaller CHP units with a duty up to 100kW cost range is £800 - £1500 per kW	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

J Roughly south-facing, un shaded for hot water

K Feasible ground conditions

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

M Suitable use of heat during summer

N Small scale in environmental sensitive areas

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.

RLB Field is RLB's in-house electronic data capture tool, operating across a variety of platforms (tablet, smart phone, desktop), providing a forward-thinking digital platform for delivery to customers.

All data is captured and submitted securely over the internet and stored on RLB's cloud-based servers. This platform allows the transfer of data securely to third-party systems, as per the individual customer requirement.

With customer needs at the forefront of everything we do, the nature of RLB Field's custom form and report design, all internally-developed, gives the flexibility to tailor the Application to customer requirements, with immediate results.

This flexibility is proven by the ability to deliver across a range of different services, including; project and programme management, cost management and quantity surveying, building surveying, health & safety and advisory.

Commissions range from using the Application as a tracking tool with milestone collection for programme reporting, large-scale condition surveys for property portfolio and cost plans, simple schedules of condition, asset capture, health & safety site inspections, complex cost reports, snagging and daily/weekly reporting, along with many more.

Less paper, less admin time, consistently better results.

By combining technical skills with IT expertise, the RLB Field solution continues to drive efficiency, consistency and quality of data capture, alongside bespoke, dynamic, real-time reporting for our customers.

To find out more, please get in touch:

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CONSTRUCTION INSIGHTS

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 developing new ways of sharing and reporting on information, making data more accessible, more visual and more responsive, for our staff and our customers.

RLB Focus is a cloud-based reporting tool that draws together data from multiple different sources and presents the analysis as a series of interactive visuals, including charts, maps and gauges.

This “data on-demand” service makes it easier to view all critical business or project data in one place, providing a powerful but user-friendly tool that can help inform and support business decisions. As a primarily cloud-based solution, RLB Focus can be accessed on desktop, mobile or tablet devices, meaning insights are never more than a couple of clicks away.

Key to making informed decisions from data is the ability to explore and interrogate the data. RLB Focus enables users to interact with reports and dashboards, slicing and drilling down into the data to yield the intelligence that is most relevant to them. Through RLB Focus, data can be modelled into an efficient visual analysis, providing insight at a granular level. This means RLB Focus is helping our customers, across a range of sectors and services, make informed decisions quickly.

As technology continues to shape our industry and data becomes increasingly prevalent in our day-to-day lives, RLB’s commitment to digitisation and technological enablement allows us to continue to deliver the very highest quality of service for our customers.

To find out more, please get in touch:

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BROAD STREET MALL READING, UK Reading's Original Mall



Credit: Corstorphine + Wright Architects, and Shearing

RETAIL - DIGITAL DISRUPTION OR DIGITAL TRANSFORMATION?

There is no doubt that technology is driving the way we work, play and live, but the changes taking place in the retail sector are happening so fast that many retailers are finding it hard to keep up.

Advances in technology have changed the landscape of our high streets forever and those retailers that have survived the demise of the UK high street have done so by realising that what customers want is not a single source solution of bricks and mortar, but an integrated omnichannel shopping experience.

Until recently the primary drivers of digital change in store have been customer payment improvements like the productivity enhancements of self-service checkouts. The next generation of this change is now on trial with forward thinking retailers with efficient mobile-pay apps likely to do away with checkouts altogether in the not too distant future. However, the challenge as this transformation occurs will be to maintain customer contact and thus loyalty via strong underlying customer service principles.

In-store digital transformation rather than disruption is the order of the day for most bricks and mortar retailers with concentration on ensuring operations are slick, cost effective and customer friendly.

With technology enabling less sales collateral and more information now online the impact in store is noticeable with a cleaner and clearer retail look and feel within the sales space. This change is in turn enabling selective products, and more importantly accessories or add-on purchases that have higher profit margins, to be displayed more prominently.

It is not just about the look and feel of the store though.

Technology is being integrated into the retail build process with 3D modelling used to plan, design and fulfil the space.

At RLB, we have seen the first-hand use of applied learning and technology to manage build process and the contracting supply chain to ensure they meet their KPIs and that programmes remain on target. We have achieved this with the launch of RLB Field, an app that enables data capture, live reporting and surveying directly from site, reducing extensive administration time and paperwork.

RLB Field is also helping RLB to deliver valuable insight using innovative data analysis – supporting the design to be at the forefront of thought leadership and maintain a trusted advisor status.

Technology is here to stay and whether we are excited or enraged by it we need to embrace the benefits.¹²

Julian King

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Click here to read about digital disruption, and much more, in RLB's Perspective magazine



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 and programme management, building surveying and 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



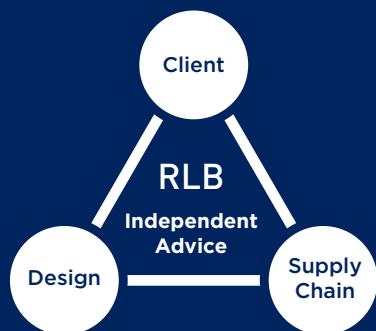
Suppliers Act with integrity, honesty and fairness in all our relationships



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

OUR SERVICES

At Rider Levett Bucknall 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 and digital disruption evolving the way we design, procure and construct projects, we believe our services should offer truly independent advice within the project environments in which we work.



We bring fresh, independent perspectives and combine our quality assured technical expertise and technology to deliver service excellence and operational efficiencies collaboratively to our industry.

We know that it is only through the skill and passion of our people that we can provide the highest standard of service to our customers, exercising professional judgement and insight – using our knowledge to the advantage of our customers.

We focus on:

- Expressing a valuable opinion
- Commenting on value added
- Enabling informed decisions

The focus on how we deliver our service carries equal importance and our formal customer service programme supports our teams to take personal ownership, be highly responsive, focus on building collaborative relationships and an understanding of the broader project environments we work within. We call this the RLB way.

We recognise the changing nature of our industry and the focus on driving productivity and value. In response to this, we are embracing the opportunities associated with digital technologies and data. Our investment in digital services, in particular RLB Field and RLB Focus, represents the evolution of the RLB way and our commitment to delivering the best outcomes for our customers.

We deliver services in four key areas:

- Cost management and quantity surveying
- Project and programme management
- Building surveying & Health & Safety
- Advisory services (including design management, specification consultancy, facilities management consultancy, contract advisory and sustainability consultancy)

We believe in the importance of our professional associations to shape all aspects of our industry, to uphold the ethics of our professions, set evolving quality standards and attract the talent to our industry for the future. We work very closely with our professional bodies to proactively contribute to the development of our industry.

Through the flawless execution of our professional advice and the skills and passion of our people, we truly enable our customers to bring their imagination to life.

Andrew Reynolds

UK and Global Board Director

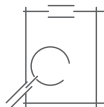
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ABOUT RLB: OUR SERVICES

COST MANAGEMENT & QUANTITY SURVEYING



Head of Service: Russell Lloyd

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COST MANAGEMENT

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.

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 abnormalities.

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.

ABOUT RLB: OUR SERVICES

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.

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 & PROGRAMME MANAGEMENT



Head of Service: Jo Reynolds

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Our full range of project and programme management services complement our chosen sectors and individual customer requirements.

Our services relate to projects and programmes across all stages, from project inception and helping our customers to write their business plans to shape change, through to feasibility, procurement, construction and review.

We have a national and global reach enabling our services to be agile, working alongside our customers as they profile their property portfolio.

We recognise that different sectors and different customers have differing needs and we offer project and programme management services from a light touch to full detailed service. RLB is adaptable and can provide exactly the right service level to achieve the best project outcome.

RLB has the hard protocols and robust systems in place to manage the project timelines, communications, cost and risk and also 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 both project management and programme management and has extensive experience within the UK of delivering both individual projects and major change programmes.

Our approach to programme management is also 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. We have specialist programme managers that work nationally with an unrivalled passion to deliver successful change.

RLB delivers projects on time and on budget, without compromising quality, through its skilled coordination of these services:

- Project management
- Programme management
- Employer's agent
- Development management
- Project Monitoring / Independent Certifier
- Strategic project management
- Business cases
- Move management
- Project control
- Procurement advice
- Risk management
- Due diligence
- Management consultancy
- Commissioning management

BUILDING SURVEYING



Head of Service: Chris Hartley

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RLB benefits from having a large team of Chartered Building Surveyors and Mechanical and Electrical Engineers based within our offices, providing advice 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 to ensure our services are communicated in a manner to suit the audience. We have developed 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 and mechanical and electrical engineers naturally bring commercial awareness and ability, ensuring we are adding maximum value to built assets on many tasks including;

- Carrying out feasibility studies
- Space utilisation planning and churn to maximise efficiencies
- Advising on modern methods of construction
- Determining the condition of buildings, identifying and analysing defects including proposals for repair and on-going maintenance costs of individual buildings and estates
- Advising on energy efficiency, life-cycle costing and environmental impact
- Reporting upon and instructing on the preservation/conservation of historic buildings
- Advising on schemes and projects and determining requirements

- Preparing scheme designs with costing, programmes for completion and specifications of work
- Organising documents for tender and advising on appointing contractors, designers and procurement routes
- Ensuring projects are completed on budget and to schedule
- Fund and development monitoring including independent certifier roles
- Quality monitoring, technical due diligence and compliance inspections
- Advising on the management and supervision of maintenance of buildings
- Dealing with planning applications and advising on property legislation and building regulations
- Assessing and designing buildings and adaptations to meet the needs of people with disabilities
- Negotiating dilapidations (when there is a legal liability for a property's state of disrepair)
- Advising on the compliance and health and safety aspects of a building
- Advising on boundary and rights of lights disputes and party wall procedures
- Preparing insurance assessments, valuations and claims
- Pre-acquisition and disposal 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 H&S legislation, including Management of H&S Regulations 1999 and CDM 2015, for construction projects, maintenance and repair works.

Our Health & Safety professionals are registered on the HSE's approved Health & Safety Consultants Register (OHSCR) and hold recognised qualifications and accreditations, including Chartered Fellow members of IOSH, Fellow members of APS and Chartered members of RICS and / or CIOB. Our experts are active members of industry working groups such as DIOHAS, CIOB H&S Advisory Group, APS SSIP Practice group, observers at CONIAC, and Advisers to HSE for FFI Disputes panel. Our practitioners provide training and are experienced in the delivery of IOSH, APS, CITB accredited training programmes as well as a range of bespoke health & safety management and CDM15 courses.

Our services include:

- Occupational Health and Safety Management Systems, advice, monitoring and audits
- Due Diligence and Gap Analysis
- Property and Real Estate Asset Assessments
 - Roof Risk Assessments
 - Property Risk Assessments
 - Fire Safety Risk Assessments
- Fire Safety
 - Fire Safety Policies
 - Fire Safety Risk Assessments
 - FSRA Audits and Reviews
 - Fire Safety Evacuation Plans (General)
 - Business Continuity planning and Emergency Preparedness plans
- Asbestos Survey Reports and Management Plan Reviews
- Legionella Control and Reviews
- Accident and Incident Systems and Investigations
- Expert Witness Services

- Monitoring – Audits, Inspections and Surveys
- Maintenance Access Strategies
- Transport and Security
- Procurement and review/ revision of contracts
- Development / review of existing policies and management systems
- Construction Design and Management (CDM) services

Construction Design and Management Services

RLB has successfully provided Construction Design and Management (CDM) services since the CDM Regulations were introduced in 1994. We provide these services to a wide range of customers and have the resources, systems, and flexibility to deliver projects ranging from minor refurbishments to major complex regeneration projects.

Our expertise includes:

- Independent Client Adviser (ICA)
- Principal Designer (PD)
- Principal Designer Adviser (PDA)
- Competence assessment of organisations and / or individuals to carry out the duties of Principal Designer, Designer, Principal Contractor and Contractor
- CDM Regulations 2015 bespoke training, including two day Principal Designer Course and advice (accepted by professional bodies and developed and delivered by IOSH and CITB accredited tutors)

RLB is committed to:

- Making occupational health and safety 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

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

We offer:

- Design Management
- Specification Consultancy (RLB | Schumann)
- Facilities Management Consultancy
- 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.

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 by 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. We do not believe in a one-size-fits-all approach.

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.

FACILITIES MANAGEMENT CONSULTANCY

Head of Service: Chris Jeffers

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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 FM 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

SUSTAINABILITY CONSULTANCY

Head of Service: Heather Evans

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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 CO₂ 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 the RICS on the new 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.

CONTRACT ADVISORY SERVICES

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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, 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 across the spectrum of the construction industry from the private and public sectors as well as the highways, utilities and specialist areas such as aviation and mining, along with experience in the use of the various forms of contracts, provides customers, contractors and the supply chain with the required rounded knowledge and delivering the support required to enable positive outcomes.

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:

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RLB FUTURE PROFESSIONALS PROGRAMME

A career at RLB allows you to bring imagination to life and opens up a world of opportunities.

RLB's Future Professionals Programme offers many different pathways across all of our disciplines – cost management & quantity surveying, project & programme management, building surveying and health & safety, and advisory services.

Our Future Professionals programme offers several career routes:

Protégé: RLB's graduate recruitment and training programme. We recruit between 10 and 15 graduates a year.

We offer first-class structured professional training programmes to support achievement of your professional qualification – the Assessment of Professional Competence (APC) and the Professional Review Programme (PRP), which are RICS and CIOB accredited and are completed over a two to three year period.

Year Out: This scheme provides opportunities to work with our teams throughout the UK across a range of sectors. Many of our year out placements return to RLB after graduating, and undertake a full time role through our graduate programme to continue their professional development and achieve their professional qualification.

Apprenticeships: Whilst learning on-the-job, you'll also gain an academic and professional qualification. Key benefits include; fees paid for by RLB, earn while you learn, opportunity to travel, become professionally qualified, and have access to a structured training programme.

Internships and work placements: We offer flexible placements for undergraduates and graduates across all disciplines.

We are looking for the best and brightest people to help us bring imagination to life.

If you would like to create a better tomorrow and join our team, please visit RLB.com or email careersinbox@uk.rlb.com.

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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 1390 staff across Europe
- Operating across 32 countries
- £131 million European turnover

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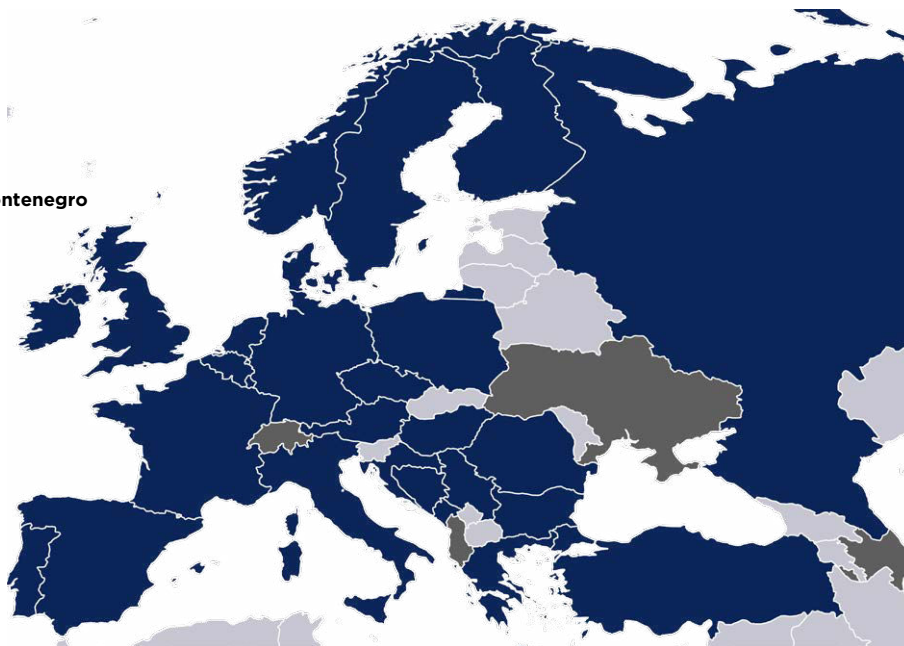
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 RLB Euro Alliance project experience



GOLD COAST 2018 COMMONWEALTH GAMES

BRISBANE, AUSTRALIA

Paving the way for the 2018 Commonwealth Games on the Gold Coast

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135	Middle East
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ONE THE ELEPHANT
LONDON, UK

Transforming a South London Neighbourhood

MISCELLANEOUS

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MISCELLANEOUS 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

MISCELLANEOUS

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

MISCELLANEOUS 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	$^{\circ}\text{F} = (^{\circ}\text{C} \times 9/5) + 32$
Degree Fahrenheit to Degree Celsius	$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$

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	$(\text{Side})^2 \times 0.433$
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	$4 \times (\text{radius})^2 \times 3.1416$
Surface area of cone	$(\text{radius by slant side by } 3.1416) + \text{area of base}$
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	$4/3 \times (\text{radius})^3 \times 3.1416$

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