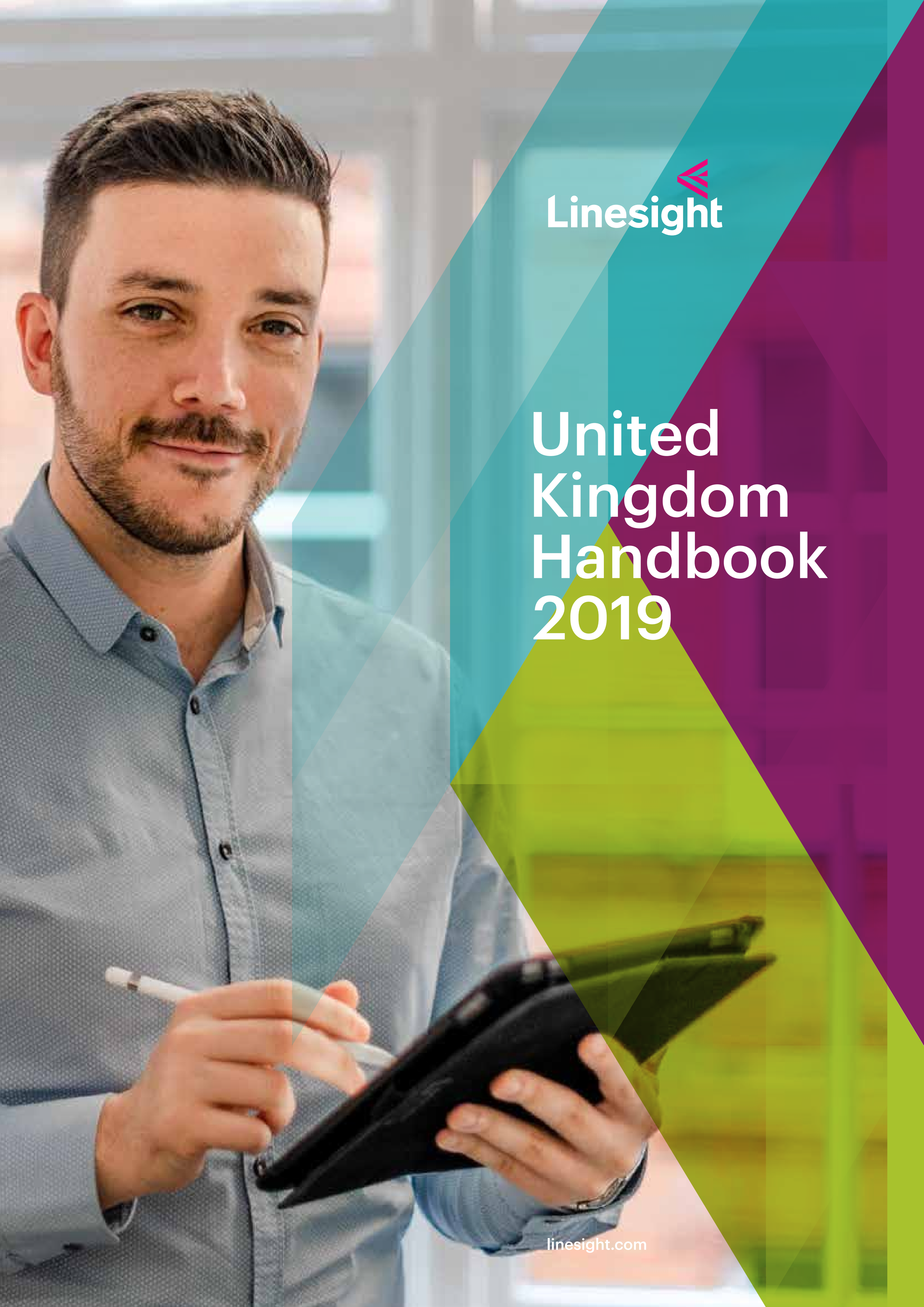

Linesight

United Kingdom Handbook 2019

linesight.com

Welcome to the Linesight United Kingdom Handbook 2019.

Each year, we bring together all the important indices and trends in construction to give you the most comprehensive industry overview possible.

The handbook represents just part of our global Linesight Knowledge Center, which you can find at:

linesight.com/knowledge-center

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160 Aldersgate Street
London
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Fletcher Priest Architects
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Economic Performance

Headline GDP growth in 2018 has been recorded at 1.4%, and is forecast to grow at a modest 1.5% and 1.7% over 2019 and 2020 respectively though this will be dependant on any agreement made by the UK with the EU over the coming months as political uncertainty has had a notable impact on business investment, both at home and abroad. The strength of sterling is still in recovery following the post-referendum depreciation and remains around 17% lower than its pre-referendum peak. Performance has been volatile during recent months and this is anticipated to continue until clarity on the terms for which the UK's withdrawal (or indeed continued membership) from the EU are known. The intrinsic link between the strength of the pound and GDP is reiterated in the Bank of England Inflation Report 2019, which highlights the sensitivities that a 5% appreciation or depreciation of sterling could have, with a swing of circa 8% on forecast GDP growth.

Construction activity is directly linked to the performance of the wider economy, and with a total GDP contribution of circa 6%, the industry recorded a year-on-year growth on all output of 0.7%, which represents the lowest annual growth since 2012. Key contributors to the slowdown are the collapse of Carillion, Brexit uncertainty and adverse weather conditions experienced during Q1 2018 – most notably the infamous 'beast from the east'. Early forecasts for 2019 predict year-on-year growth in construction output of 2%. This is reflective of the anticipated upturn in investment once clarity on the UK's trade deals are known along with the strong pipeline of residential development in regional cities such as Birmingham and Manchester. The continuation of mega infrastructure projects, such as HS2, Thames Tideway and Hinckley Point also support industry growth.

Across the construction industry greater competition is leading to tighter margins and, in some instances, alternative risk profiles are being undertaken to secure work. As such, the financial stability across the supply chain needs to be understood from the outset of projects, with adequate due diligence being undertaken beyond Tier 1 contractors, where required.

Labour market and wages

The number of people employed in the construction industry is at its highest since the financial crisis, though this is thought to have reached its peak. The ongoing struggle with sourcing skilled labour and staff across the supply chain is set to remain, which will increase wage demands.
Skill shortages are being witnessed throughout the supply chain and key trades (e.g. bricklayers) are becoming increasingly difficult to source, which is impacting lead-in times.

Average weekly earnings in the industry increased by 4.2% year-on-year to November 2018. Wage increases are expected throughout 2019 as demand outweighs supply, though a slowdown in growth from previous years is anticipated due to companies reaching a 'tipping point' in what they are willing, or indeed able, to pay.
The UK unemployment rate is predicted to remain broadly flat at around 4%.

Early forecasts for 2019 predict year-on-year growth in construction output of 2%.

Sector outlook

The Residential sector has performed well, supported by government policy initiatives to meet demand. The build-to-rent (PRS) market continues to grow to meet the shortfall in supply from the built-for-sale market.
The private sector remains fragile, with a number of large schemes on hold pending clarity on the UK's withdrawal from the EU. Furthermore, developers are citing the amount of red tape as prohibitive to future growth, in particular the redevelopment of derelict brown field sites.
The commercial office sub-sector has had a mixed performance across the UK. The London market has remained strong throughout 2018 with more new space delivered than 2017. The development pipeline is anticipated to soften during 2019, but will remain above average, while demand for new space is expected to continue. However, developers are adopting a more cautious approach and typically require a pre-let to be in place before committing to development, be it new build or refurbishment – a trend which is stifling growth.
Retail continues to struggle with increased competition from online retailers, which conversely has led to improvement within the industrial sub-sector, due to increased warehouse and distribution demands.
A steady performance was witnessed from Infrastructure, with megaprojects such as HS2 and Hinckley Point stimulating growth. The sector is forecast to remain constant through 2019, with increased Government spending making the industry more 'Brexit-proof' than others.
Tender prices
The Building Cost Information Service (BCIS) is currently projecting marginal quarterly increases in their Tender Price Index (TPI), with year-on-year growth of 2.2% expected in 2019. The industry-published indices are typically less optimistic, and are forecasting 1-2% construction inflation during 2019 for the UK. Building input costs recorded a 4.7% yearly rate of change in Q4 2018. By default, this puts increased pressure on the supply chain when building costs are growing at a greater rate than tender inflation.
Materials costs
Material price inflation remains above 5% and is closely linked with the performance of the pound. Key products such as structural steel, reinforcement and timber are witnessing above-average increases.
With future trade agreements at large, there are reports of stockpiling imported materials to try and mitigate the risk associated with both delay and cost. Likewise, contractors may look to shift their supply chain to UK-based suppliers where possible, to limit exposure to potential trade tariffs.

Regional outlook

The North East, East Anglia and Scotland all saw a decline in outputs in 2018, with the Southwest remaining flat. The West Midlands and North West have recorded a notable increase in output, which is underpinned by two key cities that have excelled in recent years; Birmingham and Manchester.

Birmingham

Birmingham's development pipeline continues to grow with the Residential sector, in particular, the most active. According to the Deloitte Birmingham Crane Survey 2019, the completion of residential units in 2018 was at its highest since 2008, and a total of 5,065 units are currently under construction, which is the highest level recorded. Student Accommodation is also a thriving sector, with 2,667 bed spaces completed in 2018, and a further 1,209 and 1,458 predicted for 2019 and 2020 respectively. The office market continues to attract occupier interest, with the infrastructure improvements associated with HS2 increasing the appeal to major occupiers. However, the availability of Grade A space is limited, with prime locations typically overlooked in favour of residential opportunities. Notwithstanding a strong demand for serviced office space exists and accounted for 23% of take up in 2018.

Manchester

Manchester's record levels of development are strongly supported by the buoyant residential market, with 2,659 units completed in 2018 and a strong pipeline predicted during 2019 and 2020, with circa 5,500 and 7,500 units respectively expected to be completed.
The Manchester Hotel sector continues to thrive with 840 rooms completed in 2018, and a further 2,129 rooms under construction.
The Commercial office sector remains busy, with the amount of floorspace under construction up by 37% from 2017, and according to the Deloitte Manchester Crane Survey 2019, 85% of office space under construction is new-build Grade A space.

Quanta Lounge Heathrow Airport

Architect:
Woods Bagot

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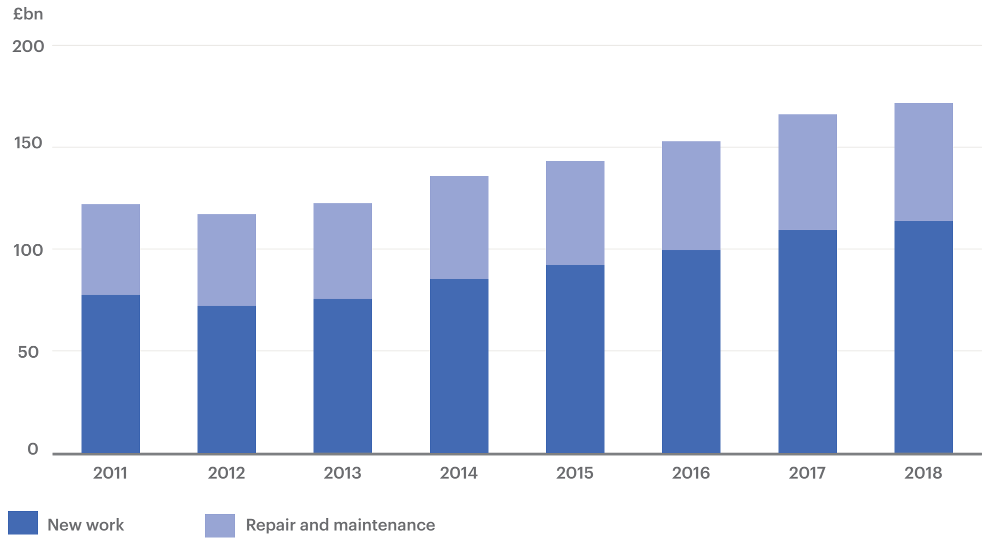
Cost Management

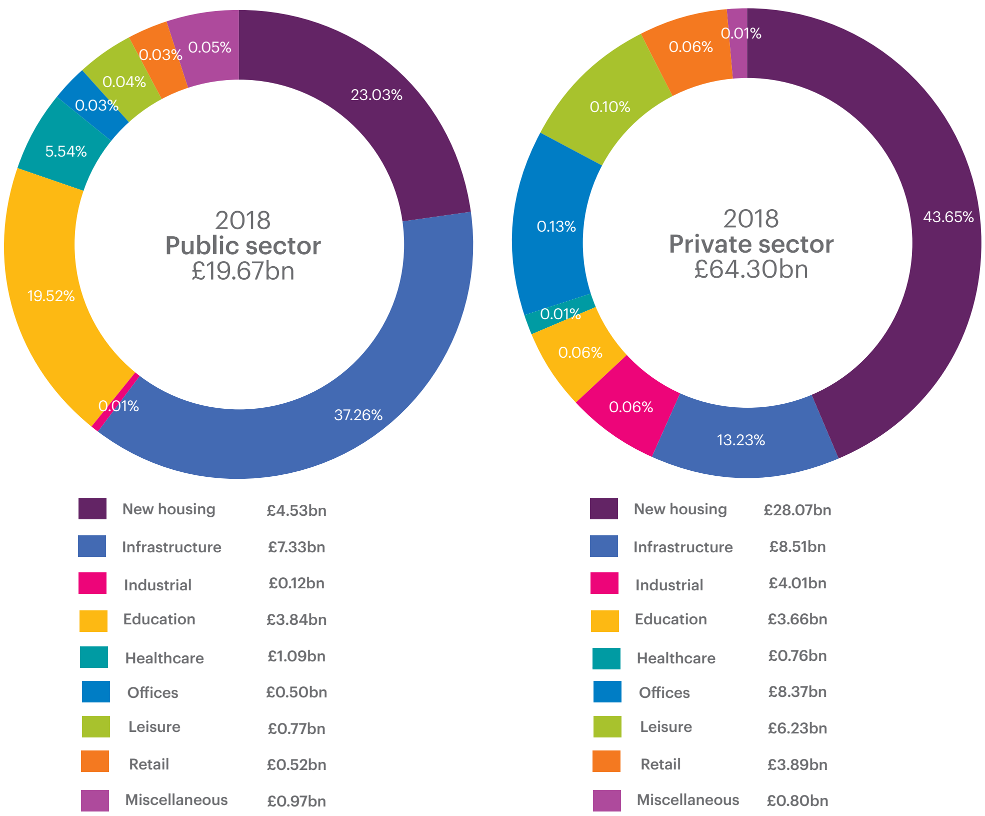
1. Macro indicators

1.1. Value of construction output*



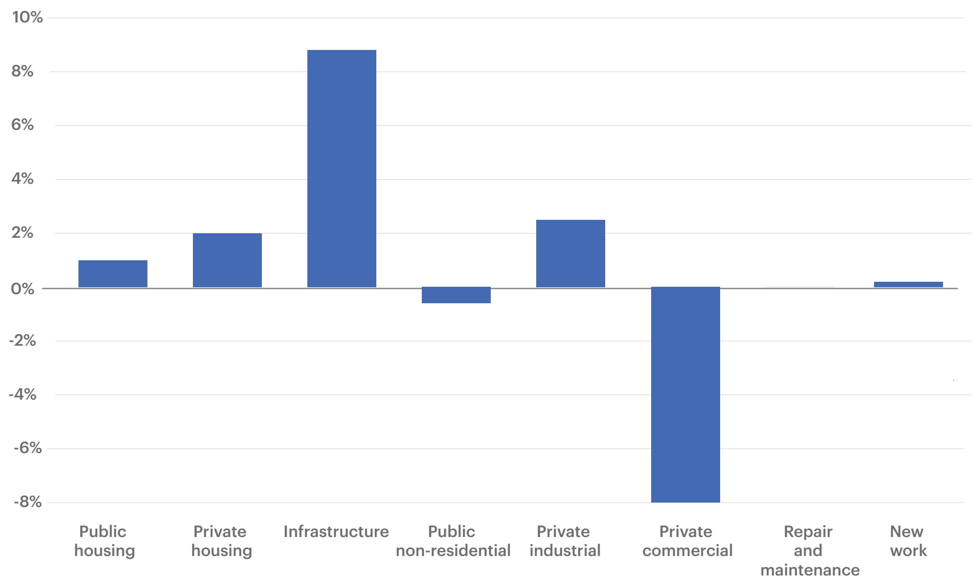
Source: *Office for National Statistics*

1.2. Public and private sector output*



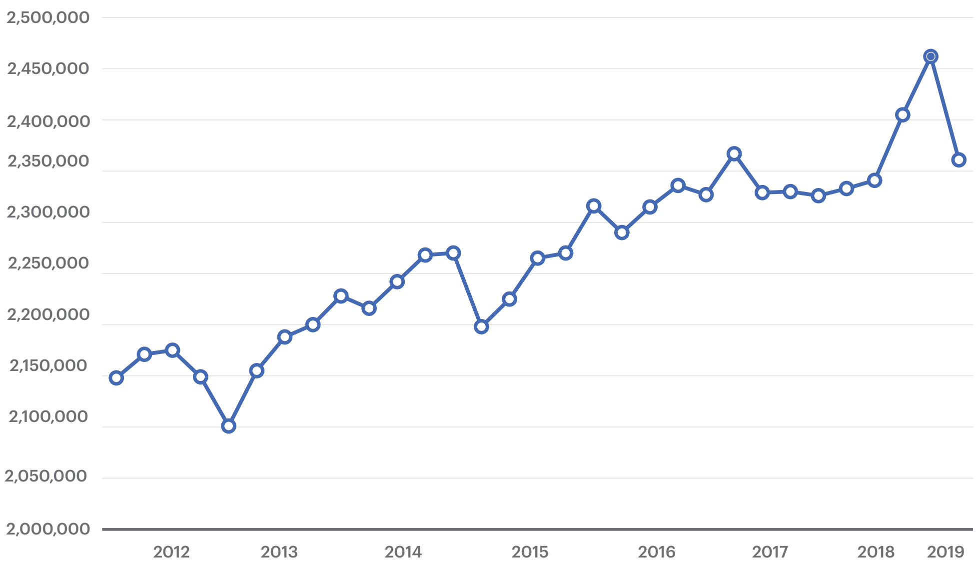
Source: *Office for National Statistics*

1.3. Forecast construction activity output 2019



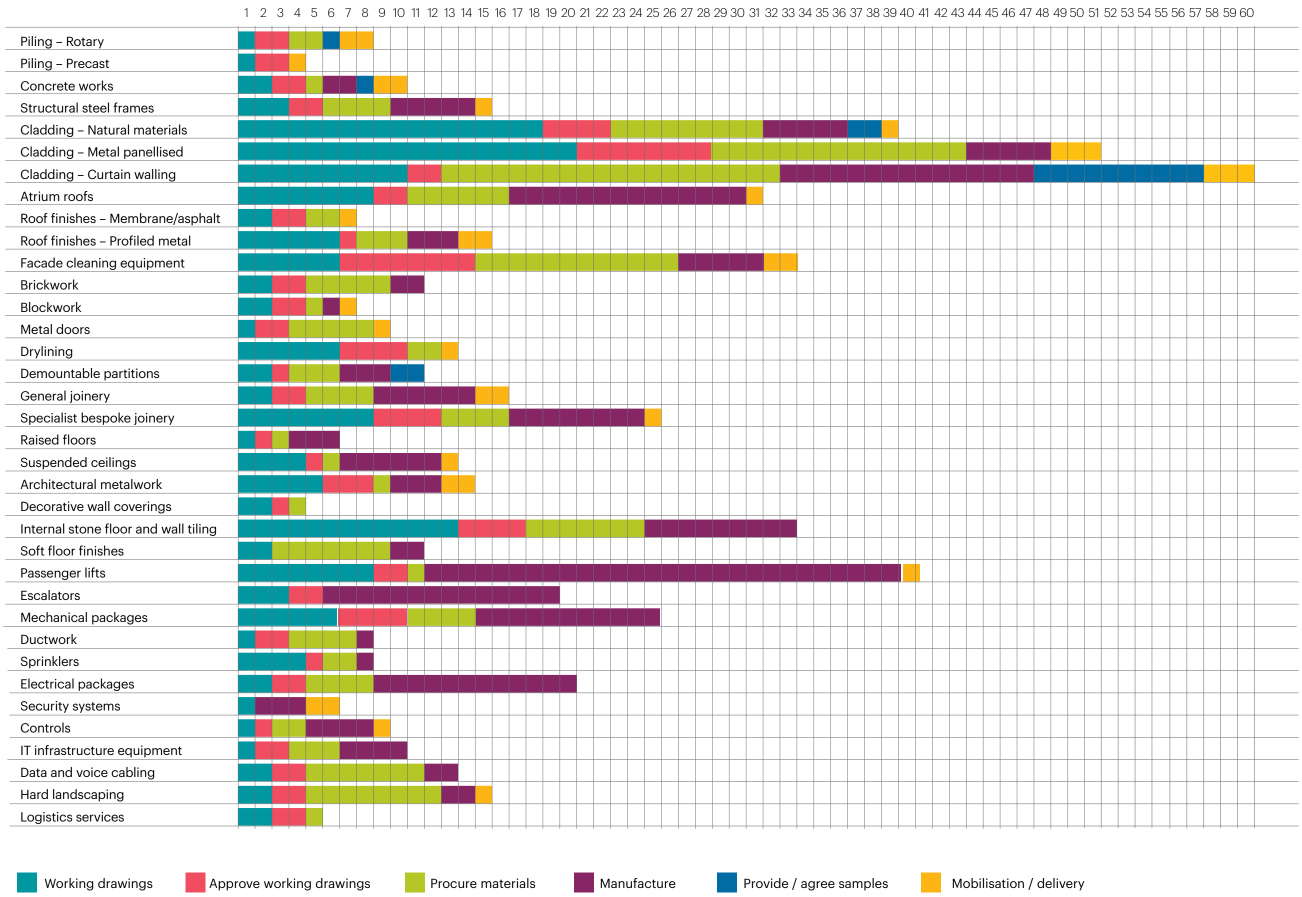
Source: *CPA*

1.4. Employment in construction*



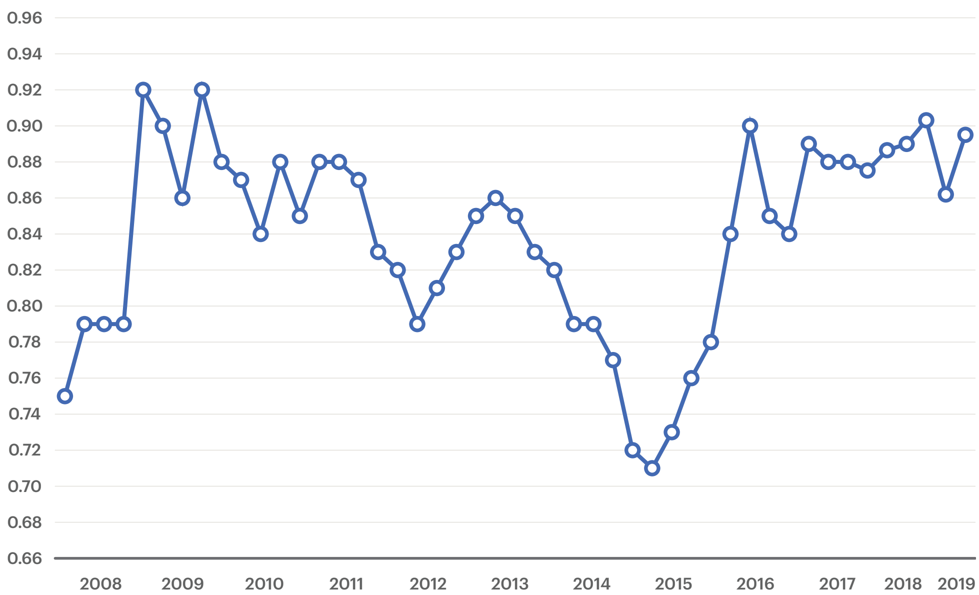
Source: *Office for National Statistics*

1.5. Average procurement lead in times



Note: *All times based on generic 5 storey 100,000ft² office block in city.*
Source: *Building Magazine*

1.6. Euro vs sterling*



Source: *European Central Bank*

2. Linesight average UK construction costs 2018

Commercial Offices	Grade	Number of Storeys	Unit	Cost Range	
Shell and core new build office facilities including common area finishes with lifts, provision for air conditioning, and sprinklers. Excludes Developer's CAT A fit-out (see below).	Premium	20 <	sq.m.	£2,700	£2,900
	A	20 <	sq.m.	£2,400	£2,800
	Medium	20 >	sq.m.	£2,000	£2,500
Shell and core new build office facilities and common finishes with lifts, provision for air conditioning, and sprinklers. Excludes Developer's CAT A fit-out (see below).	Medium	8 >	sq.m.	£1,600	£2,000
Developer's CAT A fit-out including raised floors, carpets, ceilings, fan coil units with ducts and grilles, lighting and power distribution.	BCO Standard Specification	n/a	sq.m.	£400	£600
Category B fit-out from institutional Category A specification; standard corporate accommodation; open plan - 15 per cent offices.	A	-	sq.m.	£700	£1,600
Category B fit-out from institutional Category A specification; standard corporate accommodation; banking / legal - 50 per cent offices / cellular	A	-	sq.m.	£1,100	£2,700
Category A refurbishment costs (Minor scope); Light alteration works, soft strip demolition; new reception, WC's, CAT A fit-out including raised floors, carpets, ceilings, VRF with ducts and grilles, lighting and power distribution.	A	-	sq.m.	£600	£900
Category A refurbishment costs (Medium scope); Alteration works, soft strip demolition; new reception, WC's, CAT A fit-out including raised floors, carpets, ceilings, VRF / four pipe fan coil units with ducts and grilles, lighting and power distribution.	A	-	sq.m.	£900	£2,700
Category A refurbishment costs (Major scope); Heavy alteration works, soft strip demolition; new reception, facade works, structural alterations, WC's, CAT A fit-out including raised floors, carpets, ceilings, four pipe fan coil units with ducts and grilles, lighting and power distribution.	A	-	sq.m.	£1,700	£2,600

Retail	Level of finish	Number of storeys	Unit	Cost range	
Regional shopping complex – high standard including major stores, specialty shops and enclosed malls	Medium - High	Multi	sq.m.	£1,400	£1,700
Retail Park; shell excluding fit-out	Medium - High	Single	sq.m.	£1,000	£1,400
Fit-out of small food store < 4,500 sq ft	Medium - High	Single	sq.m.	£2,700	£2,900
Fit-out of large store with food and general mechandise < 50,000 sq ft	Medium - High	Single	sq.m.	£2,000	£2,700
Fit-out of large full-range department store > 50,000 to < 100,000 sq ft	Medium - High	Multi	sq.m.	£1,900	£3,000

Residential (Excludes site abnormal costs)	Level of finish	Number of storeys	Unit	Cost range	
Single private residence up to 150 sq.m. – medium standard, double bick, natural ventilation.	Medium	2	sq.m.	£1,000	£1,700
Single private residence up to 250 sq.m. – high standard, double brick, air conditioning, high grade kitchen / bathroom	High	2	sq.m.	£2,000	£4,800
Three storey apartments – medium standard	Medium	3	sq.m.	£1,800	£2,400
Three storey apartments – high standard, air conditioning	High	3	sq.m.	£2,300	£2,600
Multi storey apartments – medium standard	Medium	20 <	sq.m.	£2,400	£3,000
Multi storey apartments – high standard	High	20 <	sq.m.	£2,500	£4,200

Industrial	Standard	Number of storeys	Unit	Cost range	
Up to 10m high warehouse – basic standard, metal clad walls, no sprinklers (up to 5,000 sq.m.)	Basic	2	sq.m.	£500	£700
Up to 10m high warehouse – basic standard, metal clad walls, no sprinklers (over 5,000 sq.m.)	Basic	2	sq.m.	£500	£600
Up to 10m high warehouse – medium standard, precast walls, no sprinklers (up to 5,000 sq.m.)	Medium	2	sq.m.	£500	£700
Up to 10m high warehouse – medium standard, precast walls, no sprinklers (over 5,000 sq.m.)	Medium	2	sq.m.	£500	£600
Up to 10m warehouse – high standard, precast walls, sprinklers (up to 5,000 sq.m.)	High	2	sq.m.	£700	£900
Up to 10m high warehouse – high standard, precast walls, sprinklers (over 5,000 sq.m.)	High	2	sq.m.	£500	£700
Truck hardstand, 175 RC slab, drainage, linemarking	-	-	sq.m.	£200	£300

Hotels (New build excluding FF&E)	Star rating	Number of storeys	Unit	Cost range	
Medium standard, minimal F+B / dining facilities, no air conditioning	2 Star	Multi	per key	£30,000	£40,000
3 star hotel, restaurant, public areas, comfort cooling, no conferencing	3 Star	Multi	per key	£45,000	£55,000
4 star hotel, restaurant, public areas, air conditioning, conferencing	4 Star	Multi	per key	£135,000	£165,000
5 star hotel, mulitple restaurants, public areas, air conditioning, banqueting, wellness	5 Star	Multi	per key	£380,000	£520,000
Super luxury 6 star hotel, mulitple, public areas, air conditioning, banqueting, wellness	6 Star	Multi	per key	£600,000	£750,000

Data centre (Excludes shell construction, incoming power & fibre upgrades, comms equipment and cooling solution). Based on traditional construction and not pre-fabricated modular systems.	Tier rating	Number of storeys	Unit	Cost range	
Fit-out of existing shell, fully built (day 1 & 2), technical load between 1,000 - 1,500 kW/m^2	Tier 2	2	KW	£6,600	£8,900
Fit-out of existing shell, fully built (day 1 & 2), technical load between 1,500 - 2,000 kW/m^2	Tier 3	2	KW	£9,000	£12,100
Tier Level 4 - Fit-out of existing shell, fully built (day 1 & 2), technical load between 1,500 - 2,000 kW/m^2	Tier 4	2	KW	£13,200	£160,800

Notes:
1. All costs exclude VAT and professional fees.
2. Costs based on January 2018 prices.
3. Average costs as shown should not be used for insurance valuation purpose.
4. The costs are representative of typical specifications for each type of building and do not account for any site abnormal costs.

Source: *Linesight*

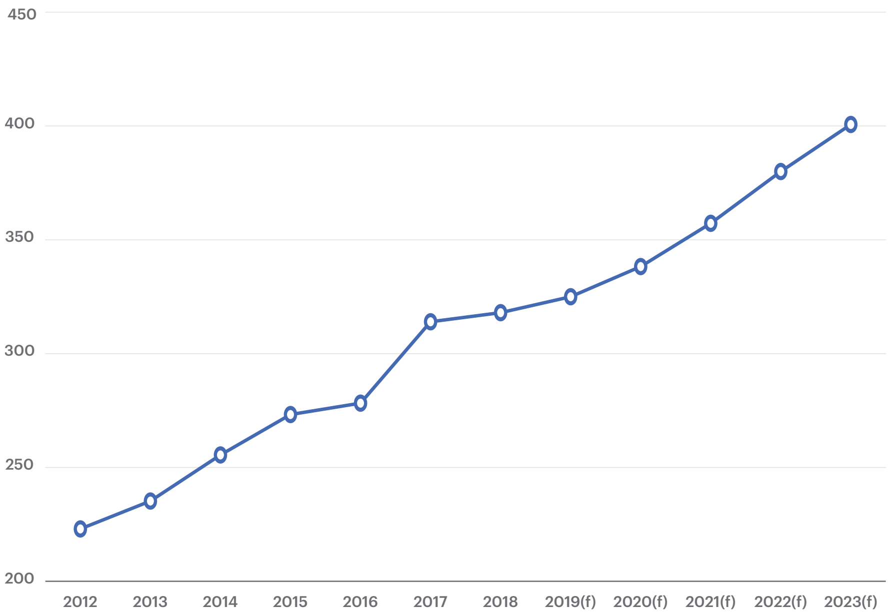
Approximate Regional Variance

Region	*Factor*
East Anglia	0.95
North West	0.92
Scotland	0.90
Northern Ireland	0.89
Yorks & Humber	0.93
North East	0.88

Region	*Factor*
Wales	0.93
South East	0.97
West Midlands	0.96
East Midlands	0.96
South West	0.94
Greater London	1.00

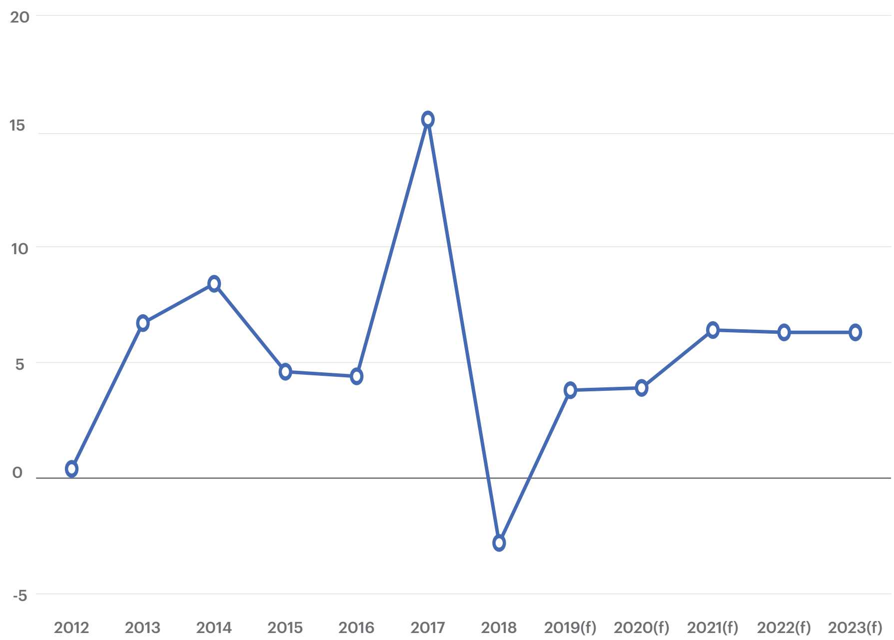
3. Indices

3.1. Tender price index



Source: *BCIS*

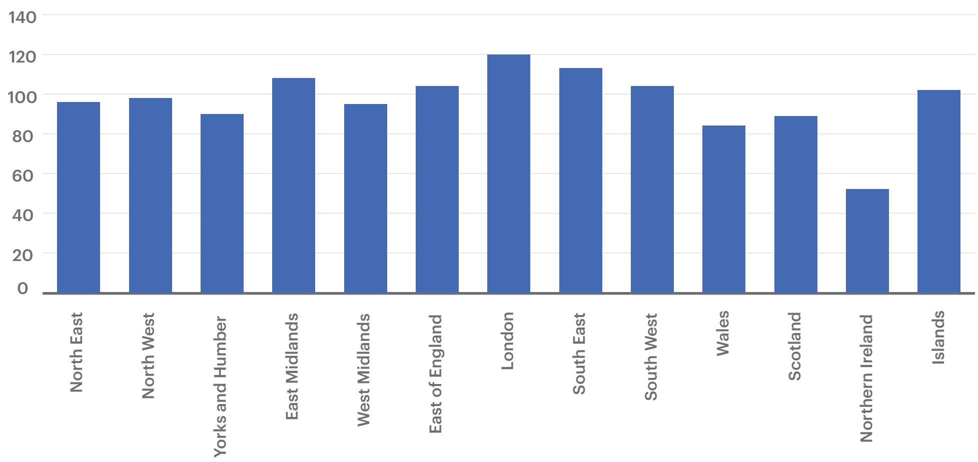
3.2. % change in tender price index



Note: *Year-on-year change at Q4*

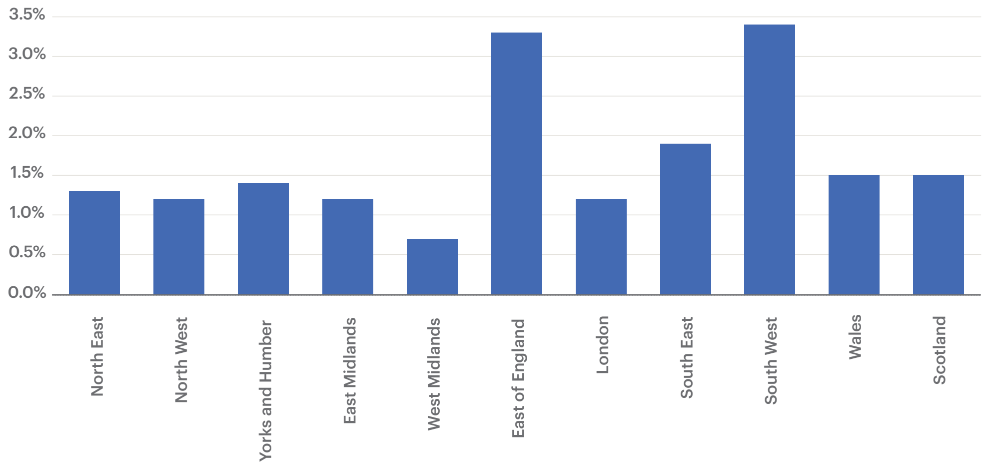
Source: *BCIS*

3.3. Regional tender price index



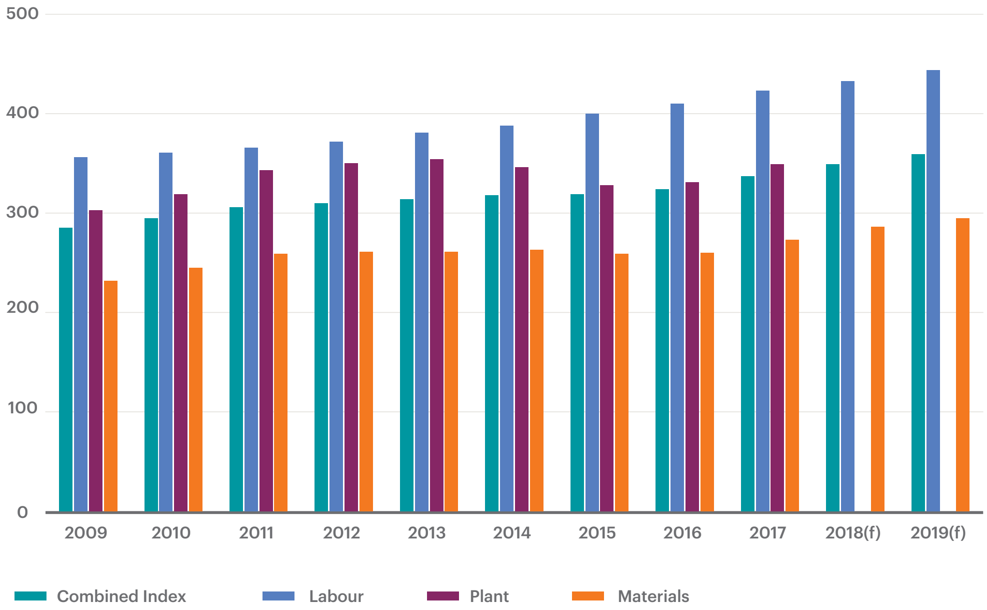
Note: *Uk mean = 100*
Source: *BCIS*

3.4. Regional annual % change in tender price index



Source: *BCIS*

3.5. Resource cost index



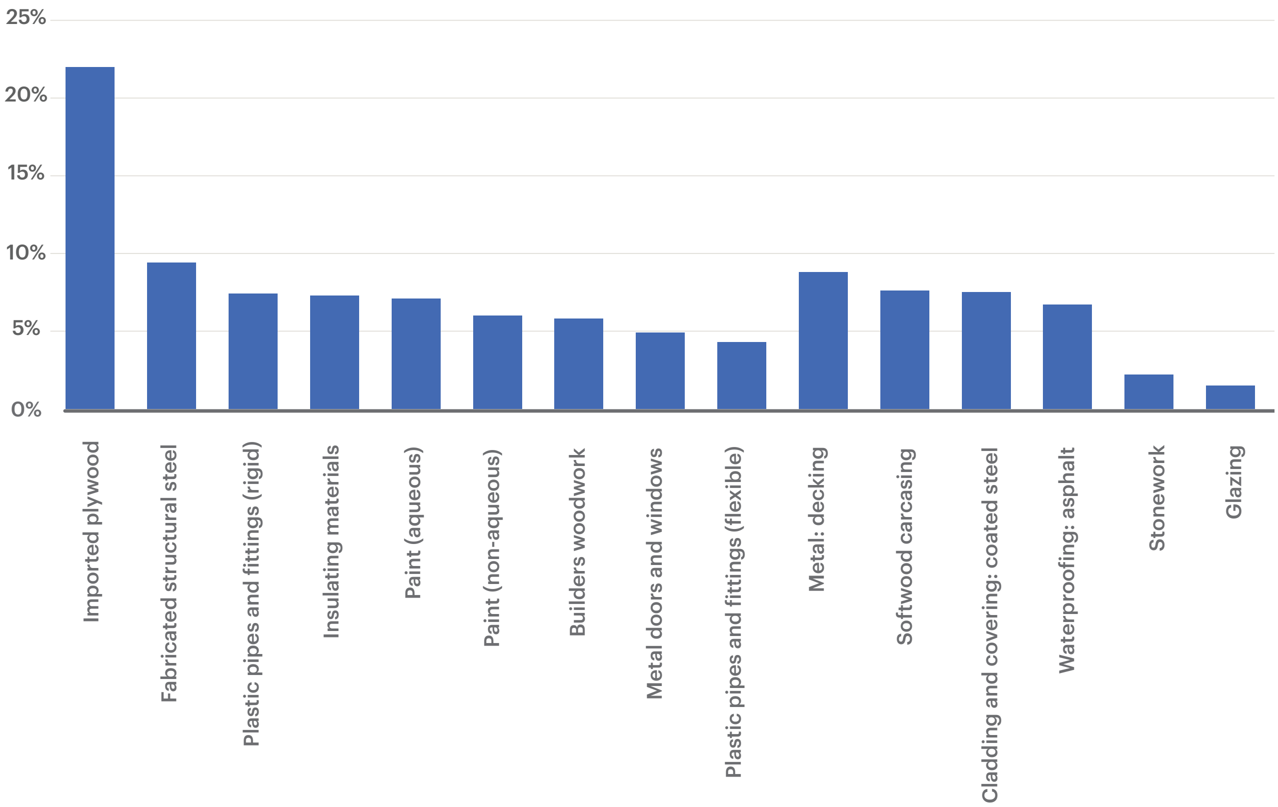
Source: BCIS	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 (f)	2019 (f)
Combined index	285	295	306	310	314	318	319	324	337	349	359
Labour	356	361	366	372	381	388	400	410	423	433	444
Plant	303	319	343	350	354	346	328	331	349	N/A	N/A
Materials	232	245	259	261	261	263	259	260	273	286	295

Note: *(f) forecasted*
Source: *BCIS*

"The culture here encourages you to take the lead on projects with the support of senior team members there for guidance, and improve your client-facing skills."

Khalil Hossen
Cost Manager

3.6. Material price fluctuations 2018-2019



Source: *Building Magazine*

4. Main contractors, architects and engineering firms

4.1. Top UK main contractors

2018 rank	2017 rank	Firm	Contracting turnover (£m)	Pre-tax profit (£m)
1	1	Balfour Beatty	8,234	165.0
2	3	Kier Group	4,282	25.8
3	4	Interserve	3,251	-244.4
4	8	Galliford Try	2,820	58.7
5	5	Morgan Sindall	2,793	64.9
6	6	Amey UK	2,581	-189.8
7	11	Keller Group	2,070	110.6
8	10	Mace	2,041	23
9	9	Laing O'Rourke	2,034	-80.8
10	12	Skansa UK	1,803	13.5
11	13	Costain Group	1,729	38.9
12	15	ISG	1,709	9.1
13	14	Wates Group	1,622	32.9
14	16	Willmott Dixon	1,296	33.5
15	19	Multiplex Construction Europe	1,155	4.2
16	18	BAM Construction	958	19.3
17	24	Sir Robert McAlpine	943	-20.2
18	22	Bowmer and Kirkland	928	64.4
19	20	Mears Group	900	26.5
20	26	Homeserve	900	123.3

Source: *The Construction Index*

4.2. Top UK architects

2018 rank	2017 rank	Firm	Architects UK
1	1	Foster + Partners	353
2	2	Building Design Partnership	308
3	3	Zaha Hadid Architects	247
4	4	Allford Hall Monaghan Morris	237
5	5	Sheppard Robson	170
6	6	Allies and Morrison	165
7	12	Hawkins\Brown	134
8	7	Atkins	132
9	12	Grimshaw	122
10	11	Scott Brownrigg	119
11	8	Purcell	115
12	9	Squire and Partners	113
13	15	Stride Treglown	111
14	9	TP Bennett	111
15	18	PLP Architecture	110
16	19	EPR Architects	101
17	14	Feilden Clegg Bradley Studios	100
18	16	AHR	95
19	17	PRP	94
20	22	Pollard Thomas Edwards	86

Note: *Ranked by number of chartered architects*

Source: *The Architects' Journal*

4.3. Top UK engineering firms

2018 rank	2017 rank	Firm	Engineers
1	1	Matt MacDonald	2,267
2	3	Arup	1,691
3	2	Aecom	1,637
4	4	WSP UK	1,005
5	5	Arcadis	853
6	6	Ramboll	669
7	9	RPS	518
8	7	Hoare Lea	369
9	8	BuroHappold	340
10	16	Mace	317
11	10	Peter Brett Associates	312
12	12	Pell Frishmann	238
13	11	Sweco UK	213
14	13	Cundall	200
15	23	Pick Everard	184
16	14	Hilson Moran	157
17	18	Curtins Consulting	105
18	32	JNP Group	91
19	19	HaskoningDHV UK	85
20	21	BDP	83

Note: *Ranked by number of Chartered Engineers*

Source: *Building Magazine*

"Working at Linesight has enabled me to progress much faster than I would have elsewhere – I'm getting hands-on experience on live projects, while working one-on-one with supportive and experienced mentors."

Jack Stewart
Graduate Cost Manager

5. Wage rates and charges

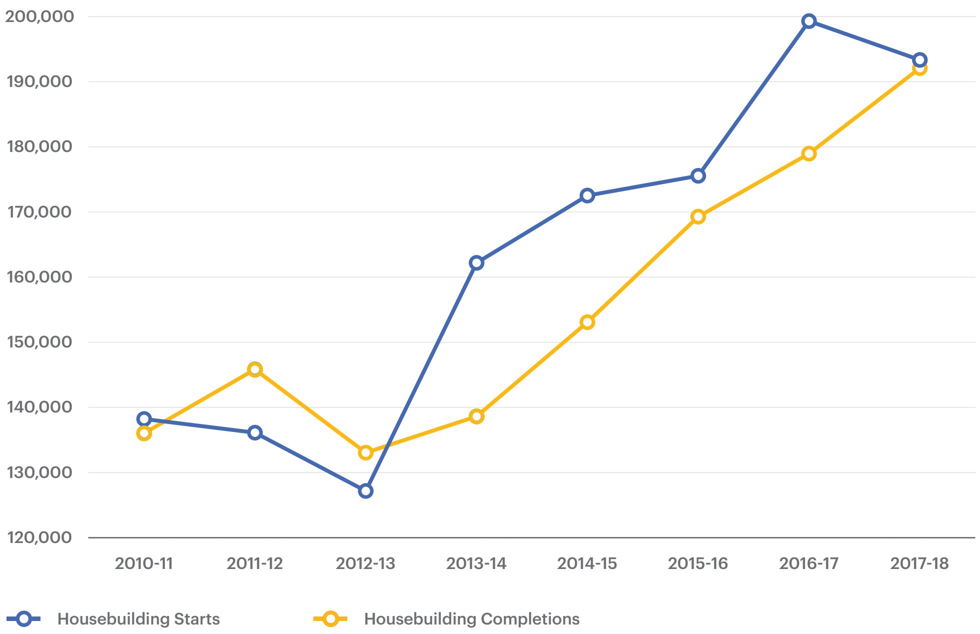
5.1. UK standard hourly base rates for labour

£17.19 - (base rate)	Technical Plumber
£16.82 - (base rate)	Approved Electrician
£11.93 - (base rate)	Building Craft Operative
£11.36 - (base rate)	Building Skill Rate 1
£10.24 - (base rate)	Building Skill Rate 3
£10.10 - (base rate)	Demolition Workers
£16.49 - (base rate)	HVAC Senior Craftsman
£8.97 - (base rate)	Building General Operative
£10.94 - (base rate)	Building Skill Rate 2
£9.67 - (base rate)	Building Skill Rate 4
£15.48 - (base rate)	Advanced Plumber
£12.08 - (base rate)	Advanced Craftsmen

Source: *BCIS*

6. Housing

6.1. Housebuilding starts and completions



Source: *Office for National Statistics*

River House
Belfast
Architect:
Povall Worthington
Linesight services:
Cost Management

REVIEW & OUTLOOK:

Global Insights

Global Market Review

Trade dispute between the world's two largest economies has the global economy holding its breath in anticipation of the outcome.

Although the deadline has recently been extended, the potential outcome in the current US-China trade dispute continues to cast a shadow over global economic prospects. The IMF has reduced its global growth projection for 2019 by 0.2 percentage points since its projection in October 2018. When asked what had changed since October at the World Economic Forum Annual meeting in Davos, Christine Lagarde (Managing Director of the IMF) responded that it is the level of risk and the acceleration of the pace at which risks are materialising.

The reduction to 3.5% growth in 2019, is largely due to weaker performances in Europe and Asia, specifically relating to trade tariffs between the US and China, and Brexit. However, as Lagarde points out, it is still growth, albeit a little more modest than previously predicted.

US set to break record despite slowdown

The strong performance of the US economy is expected to continue in 2019. The financial results for 2018 were delayed due to the partial government shut down in January, however figures show that significant growth in the first three quarters were balanced by a significant slow-down in the fourth quarter.

Commentators are expressing the view that the beneficial impact of tax reforms introduced by the Trump administrations are fading. Nevertheless, the economy is in a strong position and the Federal Reserve has indicated that it intends to implement moderate rate hikes in 2019 and 2020, in order to keep the economy from overheating amid rising inflation and a rapid decline in unemployment. If the current expansion in the US economy continues past July 2019, it will have broken the previous record of a decade of expansion, which was set by the tech boom in the 1990s.

The US appears to be on track for this by avoiding overheating and financial imbalances - the classic causes of recessions. President Trump is determined to follow through on his campaign promise to end unfair practices with trading partners - late in 2018 he reached agreement on the replacement of the NAFTA, now known as the USMCA (United States-Mexico-Canada Agreement). Earlier in 2018, he turned his attention to China, citing unfair trade practices and theft of intellectual property. China then made a counterattack, and hence we have a trade war on our hands.

China to increase public spending

The Chinese economy, the second largest in the world, is expected to slow down further in 2019. The Government had been implementing a plan to reduce debt and risky lending. However, in response to the trade war, they are switching policy and tending towards a stimulus package of more fiscal spending, reducing the amount of money the bank needs to hold in reserve at the central bank and thus freeing up money for additional lending; building a resilient domestic market and stabilising economic growth and monetary easing in order to enhance growth.

Europe still in flux

In Europe, uncertainty around Brexit still dominates. Business investment and domestic consumption in the UK is likely to remain subdued while the issue of Brexit is unresolved. A no-deal Brexit will likely cause a serious economic shock, while leaving the EU with a deal could result in a boost in investment and consumer sentiment, which has been subdued for the last number of years. Germany, the largest economy in the eurozone, is dealing with a softening of private consumption, and introduction of new automobile fuel emission standards have resulted in a weak industrial production.

Meanwhile, France is dealing with ‘Gilet Jaunes’ or the ‘Yellow Vest’ movement, and after 10 weeks the protests are finally showing signs of receding. However, what was previously viewed as an unorganised movement is morphing and changing, and the final shape it takes could be of political concern. In Italy, weak domestic demand and higher borrowing costs together with concerns about sovereign and financial risks have dampened domestic demand.

Ireland is set to see continued strong growth, which will shield it somewhat from the slowdown in the global economy. However, labour shortages, pressure on public services and rising prices caused by this strong growth present major challenges for Government and businesses alike. The outlook is overshadowed by the prospect of a hard Brexit, which would negatively impact on Ireland’s growth, with rural Ireland being particularly impacted.

The GCC continues to diversify

Oil prices have been volatile thanks to swings in supply, and OPEC has agreed to cut production with a view to returning prices to US$70 a barrel later in 2019. However, the GCC economy continues to improve, with a period of increasing interest rates and the prospect of stable oil prices. In particular, Saudi Arabia continues with its diversification plans as part of its ‘Vision 2030’ plan. And while the geopolitical situation remains a concern, improved economic dynamics are offsetting these concerns.

The governments continue their drive to reduce the economies’ dependency on oil prices, and thus we have seen a trend of mergers and acquisitions, particularly in the banking sector. These M&As are seen as an opportunity to improve economies of scale and scope, and to improve market share in the global markets.

The governments are also focusing on continuing to attract foreign direct investment, which is stimulating economic growth and boosting investor confidence in the region. The UAE has made some significant investments in technology, and in particular renewable energy, with the ambition to have 44% of its energy requirements provided through renewable resources by 2050.

Its investment in infrastructure continues, as it prepares for Expo 2020, which is providing a stimulus for the regional construction industry. While FDI investment in the UAE is expected to significantly increase with recent investment law provisions, relaxation of visa rules and other business-friendly reforms also appear poised to both attract qualified foreign workers. However, Egypt is expected to be the region’s top performer in 2019, followed by Iraq. Iran will contract again in 2019 as US sanctions continue.

In Israel domestic demand should continue to support economic growth this year. Private consumption will likely benefit from a lower tax burden and still-favourable financial conditions. New gas and oil-related projects are expected to boost fixed investment growth. On the other hand, regional tensions remain a key downside risk and cloud the outlook.

The Chinese economy, the second largest in the world, is expected to slow down further in 2019.

Asia Pacific remains robust

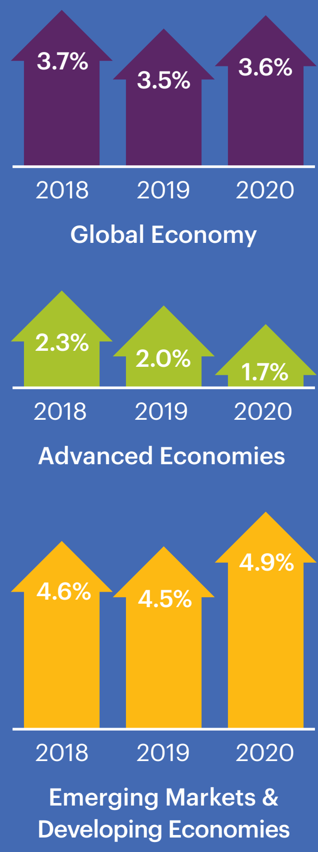
A recent press release by the Singapore's Ministry of Trade and Investment noted that its economy is, like many other global economies, expected to slow in 2019. The manufacturing sector, in particular electronics and precision engineering, is experiencing difficulties due to weakening global demand for semiconductors and associated equipment. While other sectors, such as wholesale trade, transportation and storage finance and insurance are expecting to moderate in growth, in line with the global economy. The information and communications, health and social services sectors are expected to remain resilient due to demand for IT and digital solutions. The construction industry is expected to see a pick-up after three consecutive years of contraction. Politically, there is speculation that general elections will be held this year to take advantage of the still-strong domestic growth and heightened public morale following bicentennial commemorations.

Remarkably, the Australian economy has gone 27 years without a recession. While there are risks to the economy, it is expected that business investment, rising exports of commodities and Government spending will likely offset the contracting housing sector, subdued consumer spending and devastating drought.

Employment growth is strong, as the Australians consistently add more jobs than needed to accommodate the growth of the working-age population, resulting in reduced unemployment rates and participation rates increasing to the highest level on record. In addition to increased production capacity from LNG plants, the Australian resource sector is also seeing increased activity from the Chinese in response to the US tariffs, in iron ore and coal particularly, though this cannot be relied upon in the longer term. Thus, growth in 2019 should be moderate.

Kim Hegarty
Associate Director

Growth projections



Source: *International Monetary Fund*


毛泽东

GLOBAL INSIGHT

How is sustainability impacting the built environment?

Sustainability is the process of maintaining change in a balanced environment, in which the use of resources, the direction of investments, the orientation of technological development and institutional change are all in harmony, and enhance both current and future potential to meet human needs and aspirations.

For many in the field, sustainability is defined in terms of three interconnected domains or pillars: environment, economy and society. Economy and society are constrained by environmental limits.

Sustainable building (aka green construction or green building) refers to both a structure and the application of processes that are environmentally responsible and resource-efficient through a building's life cycle. This extends from planning to design, construction, operation, maintenance, renovation and demolition.

There are several associated built environment goals; to design future projects to minimise energy and water consumption, as well as wastewater production; incorporate sustainable design principles into capital investment decisions; base capital investment decisions on life cycle cost, including the cost of known future expenditures.

Positive impacts

Sustainability in buildings refers to their ability to be environmentally responsible throughout their life cycle, from planning and design through to operation and maintenance.

It is based on energy use, water use, indoor environmental quality, material selection and the building's effect on the site, while also addressing the impact on human health and the environment. It does this by:

1. Reducing waste, pollution and degradation of the environment
2. Efficiently using energy and water, along with other resources
3. Protecting occupant health and productivity

Ultimately, and intuitively, a greener and more efficient design and operation has less impact on the environment, as well as minimising harmful effects on human health and the environment.

Beyond new developments, existing buildings need to be upgraded to be more energy efficient and use renewable energy sources to lower greenhouse gas emission.

The economic and social benefits associated with green building, as listed below, are also significant.

Economic benefits:

- Reducing operating costs
- Improving occupants' productivity
- Creating market for green products

Social benefits:

- Improving quality of life
- Minimising strain on local environment
- Improving occupants' health and comfort
- Promote a better planet
- Sustain environment without disrupting natural habitat

LEED and WELL certification:

LEED is the most widely used green building rating system in the world, with a LEED-certified building offering considerable cost savings to owners, in terms of maintenance costs over the building's life cycle. LEED sustainability standards for design have now become a part of architectural design on a standard level, leading to the next level of occupant wellbeing, with the new WELL Building Standards.

WELL is a performance-based system for measuring, certifying and monitoring features of the built environment that impact human health and well-being through seven concepts: air, water, nourishment, light, fitness, comfort and mind. The below seven concepts are pillars upon which sustainability relates to the human side of a building:

- Air
- Water
- Nourishment
- Light
- Fitness
- Comfort
- Mind

In addition, innovation is a key consideration, in terms of promoting the continuous advancement of WELL and allowing project teams to achieve higher certification levels. There are five innovation features that each count as an optimisation for any of the project types.

nZEB

The Irish construction industry is facing into somewhat unknown territory in the coming years as a result of the EU Energy Performance of Buildings Directive. Under this Directive, all new buildings constructed in member states will be near zero energy buildings (nZEB) by December 31, 2020, and new buildings owned and occupied by public authorities must be nZEB after December 31, 2018.

WELL is a performance-based system for measuring, certifying and monitoring features of the built environment that impact human health and well-being through seven concepts: air, water, nourishment, light, fitness, comfort and mind.

This Directive has since been incorporated into the current Irish Building regulations. As the industry is still at the very early stages of nZEB, we maintain that until such time as the current projects are further progressed, analysed and completed, the true cost of construction for achieving nZEB on a variety of projects will not be fully known. It is envisaged that it will be 18-24 months before the true cost data is realised.

One of the key design parameters that will significantly impact cost is the requirement to achieve 20% of a building's energy requirements through renewables. The most commonly adopted renewables to achieve the nZEB requirements on projects to date are photovoltaics (PVs), air-source heat pumps (ASHPs), and combined heat and power (CHP). These renewables, combined with the utilisation of LED lighting, low specific fan power (SPF) on ventilation equipment such as air handling units (AHUS), and an efficient building envelope, seem to be the key elements that are being scrutinised and attested when endeavouring to achieve nZEB requirements. The industry has made significant progress prior to the roll out ofnZEB. International clients now all demand their properties to be LEED Gold certified as a minimum, with many now targeting Platinum. This will significantly close the gap in achieving nZEB.

In summary, the age-old adage that the smallest changes can make a big impact rings true in the case of sustainability – the seemingly small measures implemented in green building processes are making all the difference. However, the importance of education, training, and the encouragement of occupant to implement best management practices for optimal sustainability cannot be underestimated.

Frances Graham,
Project Director

International clients now all demand their properties to be LEED Gold certified as a minimum, with many now targeting Platinum. This will significantly close the gap in achieving nZEB.

GLOBAL INSIGHT

How capital projects are responding to Life Sciences market trends

Global healthcare spending continues to increase dramatically and is projected to reach in excess of US$10 trillion by 2022.

This investment is driven in large part by the global increase in life expectancy, improved access to medicines and the growth of non-communicable diseases - most prominently cancer, heart disease and diabetes.

Contrary to popular perception, the Life Sciences sector covers a lot more than just pharmaceuticals. Beyond the top-tier pharmaceutical firms we all hear about, the core Life Sciences subsectors include medicine manufacturing, electromedical apparatus manufacturing, medical equipment and supplies manufacturing, and biological and chemical research and development.

In this diverse and highly-specialised group, one thing these businesses have in common is major capital requirements. Here are five trends that are shaping today's Life Sciences sector — and how they're affecting associated capital projects.

Cost is key

The life sciences industry as a whole continues to experience mounting pricing pressures, increasing access to drugs globally, growth in new innovations and therapies, and uncertain trade policies.

These forces are causing the industry to become more cost-focused. This increased focus is particularly evident in the industry's capital investments, which tend to be much more targeted than they were just a few years ago. For instance, the rush to build more factories has been replaced by a more patient approach, wherein companies are waiting until they have a new product that has gone through all phases of clinical trials and all levels of regulation before they commit to building a new facility.

Outsourcing non-core responsibilities

The outsourcing of key responsibilities is also becoming more common. For example, many life sciences companies have capital projects planned all over the world, meaning they will be spending a tremendous amount of capital over the next few years. However, these companies are simultaneously re-thinking their role in project delivery, choosing to focus more on the core operations of researching, manufacturing and selling their products. So, while their construction is increasing in number and size of projects their staffing is actually going down. This trend is most obviously manifested in the smaller in-house engineering and construction staffs we see today.

That doesn't mean that life sciences companies are eliminating their in-house capital management personnel entirely. Rather, many companies are moving to a hybrid execution model, leveraging a combination of internal and external resources. Overall though, the trend is clearly towards outsourcing project management responsibilities.

Expanding regulations

Regulations in the manufacturing of pharmaceutical products will continue to rise, as global regulators share information across borders and the entire industry relentlessly pursues product safety.

People are ingesting what is being manufactured, and the facility, its equipment, products and even the air quality in the rooms have got to be safe. Meeting these requirements means going through extensive testing and documentation. The process of commissioning and qualifying a facility to demonstrate safety and compliance to governmental regulatory agencies is already time- and resource-intensive, and as regulations continue to increase, so will this phase of a project.

New drugs and biologics

Another trend is heavy investment on behalf of many pharmaceutical companies in the research, development and manufacturing of biologics and other new cancer drugs.

Spending on new cancer drugs alone is expected to grow by more than 50% over the next few years, and the production of biologics, in particular — drugs that are derived in some way from living organisms, and have revolutionized the treatment of many cancers and chronic conditions such as multiple sclerosis, arthritis and rheumatoid arthritis, Crohn's disease and other auto-immune diseases — is expected to skyrocket over the coming several years.

Companies are waiting until they have a new product that has gone through all phases of clinical trials and all levels of regulation before they commit to building a new facility.

However, biologics and cancer treatments are expensive and time-consuming to research, test and produce, often taking many years and billions of dollars of investment before they hit the market.

Industry consolidation

Mergers and acquisitions continue to dominate headlines in the Life Sciences sector, with big pharma hunting for the next generation of medicines against declining returns on R&D. There has already been a large amount of consolidation in the industry, and experts are projecting that the larger mergers are likely to settle down. Consolidation among mid-sized manufacturers, however, especially among companies looking to take the lead in next-generation therapies or acquire producers that complement the company's core, will be the trend.

The life sciences industry continues to adapt and evolve to market conditions, a growing global population, increased regulations, stiff competition and various cost pressures. In this complex and dynamic industry, capital projects are a microcosm of healthcare's broader challenges.

Nigel Barnes, Director

Jeff Peragallo, Director

Mergers and acquisitions continue to dominate headlines in the Life Sciences sector, with big pharma hunting for the next generation of medicines against declining returns on R&D.

GLOBAL INSIGHT

How to build a data centre and keep the lights on

Data centres have gone from being almost hardly noticed to one of the most important pieces of infrastructure in the global digital economy. They host everything from financial records to Netflix movies.

As a result, data centres have become a multibillion-dollar industry, precisely because their role is so important. Designing, building and supporting data centres requires strategic planning and careful construction in order to keep clients' mission-critical data secure and available 24/7 - regardless of what it is.

There are many factors which must be addressed when designing and building a data centre. For starters, it's all about power - finding it and managing it.

Finding the power

Data centres require an incredible amount of electricity to operate and this electricity often requires the direct intervention of regional utilities in order to work. Energy infrastructure needs to be shifted, power lines need to be run and redundancies need to be established. The most secure data centres have two separate feeds from utilities, so that if something happens to one of the lines — like an unexpected squirrel attack — the centre doesn't immediately lose all of its functionality.

Coordinating that takes a lot of effort and often the clout of a large corporation in order to get anywhere. But even the big players need to check the policies of utilities and local governments in any area in which they are planning on building a data centre; they do this to ensure they will be able to establish those inputs. Because without that redundancy, data centres can be vulnerable to power outages that could result in not only the loss of critical customer data but also any negative impact on the brand of the data centre owner.

The price and availability of that power are also incredibly important considerations because a data centre is going to be a large draw at all times. With a significant amount of power going into computing, and even more going into cooling computers down, it's no surprise that data centres are using more than 1.8% of the power of the entire United States. Again, companies planning data centres need to work with local governments and utilities for subsidies and deals that can make that energy easier to afford.

Keeping the lights on

Much of the support infrastructure in data centres is focused on making sure that their power cannot be interrupted. Uninterruptible Power Supplies (UPS) -powerful batteries that can provide power almost instantaneously- are critical for this effort.

They ensure that during an emergency any power loss is returned in milliseconds, instead of seconds or minutes that could result in the loss of data or functionality for thousands of computer systems. But most UPS systems don't serve as back-up power for long. In other words, they simply don't have the kind of power storage capacity that it takes to power a data centre for more than a matter of minutes. In order to keep data centres fully running without utility power, data centre operators usually turn to large diesel-powered generators, stocked with 24-48 hour of fuel at all times.

All of this redundancy is required because of the incredible amount of energy that data centres use. But the other key factor in a data centre's success is the efficiency with which that energy is used. That starts with the organisational strategy used for cooling.

Staying cool

Data centres are carefully planned structures. Every square foot needs to contribute to the wider goals of powerful and efficient computing.

You can't just slam server racks together because their placement needs to fit in with the cooling system used to prevent overheating.

Data centres run hot, and today's advances in High-Performance Computing (HPC) mean that they are using as much as five times more energy than they used to. This makes a cooling solution one of the most important decisions that a data centre operator has to make.

By far the most common data centre cooling method involves airflow, using HVAC systems to control and lower the temperature as efficiently as possible.

In order to keep data centres fully running without utility power, data centre operators usually turn to large diesel-powered generators, stocked with 24-48 hour of fuel at all times.

Rise of liquid cooling

While liquid cooling has historically been the domain of enterprise mainframes and academic supercomputers, it is being deployed more and more in data centres. More demanding workloads driven by mobile, social media, AI and the IoT are leading to increased power demands. As such, data centre managers are scrambling to find more efficient alternatives to air-based cooling systems.

The liquid cooling approach can be hundreds of times more efficient and use significantly less power than typical HVAC cooling systems. But the data centre market is still waiting for some missing pieces of the puzzle, including industry standards for liquid-cooling solutions and an easy way for air-cooling data centres to make the transition without having to manage two cooling systems at once. Still, as the growing need for more efficient cooling shows no signs of slowing, liquid cooling will likely become the norm in years to come.

Building a data centre is about executing an extremely complex plan, with input from experts in wide-ranging fields. Firms thinking about building their own data centre should consult with experts who have dealt with their specific difficulties before to ensure that all of these core areas can be built without incident.

Modern data centres are planned down to the last wire on Building Information Management (BIM) applications and similar software, so that the outcome is as guaranteed as possible before the first wall is erected. Data centres are key arteries of the digital economy, funneling the data of the modern economy between consumers, companies, governments and citizens. That takes a lot of energy!

Eoin Byrne,
Associate

The data centre market is still waiting for some missing pieces of the puzzle, including industry standards for liquid-cooling solutions andan easy way for air-cooling data centres to make the transition without having to manage two cooling systems at once.

GLOBAL INSIGHT

Workplaces of the future

The commercial environment has been transformed from the office-based workplace of the past to the more open and collaborative space we see today. And now, we are beginning to see another transformation.

According to Gensler, the workplace of the future requires a profound change in how design supports its varied forms, meaning the design industry will have to set aside its old ways to look at the working environment holistically.

There are significant changes happening in the workplace, with a younger workforce, surge in innovation-driven businesses, global transition towards working across geographic and demographic markets, and economic and cultural shifts are becoming the new norm.

The new generation of workers is looking for work spaces suited to conversation among a few people, and for a balance between focus and the need to interact. There is a need now for the office workspace to be reshaped to interact with the community, and for smarter spaces that attract young, creative people.

Redefining standards in space utilisation

Soaring real estate costs are driving higher density and greater utilisation of space. Many large companies are now forming global standards of office spaces, that are essentially a kit of parts to be adapted to different locations, such as tech hubs, easily configured offices, open-bench workstation neighbourhoods, and open network team areas.

According to the Ted Moudis & Associates 2018 workplace report, the square footage per person is staying the same; however, the number of offices has decreased, and the number of alternative seating continues to rise.

A strong focus on amenities and well-being

Companies are placing more value on creating alternative space for focus, meetings and amenities for employees. There is an increasing amount of space being dedicated to mental and physical well-being for their staff. This amenities focus is driving activity in the workplace and encouraging movement throughout the space. The Internet of Things is allowing integration and accessibility of technologies across multiple platforms, to facilitate agility.

Design that supports mental and physical restorative opportunities throughout the day to improve morale and increase productivity is a must. Companies are now more focused on creating spaces that reflect the brand and philosophy of the company.

Working from home

Working from home is a perennial debate - some companies embrace it and some abhor it. In 2013, Yahoo banned employees from working from home, stating “some of the best decisions and insights come from the hallway and cafeteria discussions, meeting new people, and impromptu team meetings”. Speed and quality are often sacrificed when we work from home. Richard Branson from Virgin responded, “it was a backward step in an age when remote working is easier and more effective than ever”. Google noted that as few as possible people work remotely, noting that “there is something magical about sharing meals, spending time together and noodling ideas”.

Working from home is more common among full-time workers over 55, and those with dependent children. It encourages employees’ work/life balance cutting down on commuting time. Although there is the fear that not being seen in the office may cut down on promotion opportunities, pay increases and lower performance evaluations. And so, the debate goes on, with no clear winner. Although, with the pressure on higher density, the greater utilisation of space and AI innovation, perhaps the pro-working-from-home lobby may win out in the end.

Private space versus open-space interactivity

The pursuit of efficiency is leading firms which were office-heavy to opt for a more shared, open, team-based workspace, and with paper disappearing, libraries, records and administrative functions are being consolidated to reduce the footprint. Support spaces are being consolidated to allow more space for amenities. Activity-based work environments provide new amenities and a wider range of workspace types, while reducing the total area of occupancy. The forecast is that there will be an increase in semi-enclosed and small focus rooms, less executive suites, an increase in USF (usable square footage) per work seat in activity-based work environments, and an increase in both employer and building-provided amenity and wellness spaces.

According to the Ted Moudis & Associates 2018 workplace report, the square footage per person is staying the same; however, the number of offices has decreased, and the number of alternative seating continues to rise.

More visibility and transparency with open perimeters, transparent walls and low partitions are the new norm, providing a more inviting and connected environment. Informal collaboration spaces and alternative settings are helping to provide privacy zones in place of private offices.

Employees are sitting in open spaces with greater choices of where and how to work, including benching and sit-to-stand desks. On the other hand, there is a growing number of people and companies who are now thinking that the old days of the private office was not so wrong after all, allowing the closing of the door to avoid interruptions. Open office space has taken that decision away from people, and even with headphones, it is tough to avoid distractions.

Ultimately, people are different. They come in at different times, have diverse requirements, socialise at different times and have their most productive hours at different times. So, what is the solution?

There are several ways of making the environment fit all tastes, with WorkDesign Magazine proposing the following key considerations for the workplace of the future:

- Flexibility is paramount
- Technology is the ultimate enabler
- Everything is connected, with fast, smart and integrated networks
- Personalization is prioritised
- Environmental threats necessitate change – Buildings & transportation need to reduce impact on environment and change to adapt to global landscape.

In summary, the workplaces of the future are a work in progress, with no shortage of ideas. It will be a rollercoaster ride to see what the future holds, but it is an exciting time to be involved in the commercial fit-out world.

Damien Coffey, Director

More visibility and transparency with open perimeters, transparent walls and low partitions are the new norm, providing a more inviting and connected environment.

"As a Graduate Cost Manager the support I have gotten from my Director has really boosted my confidence, I'm encouraged to push myself outside of my comfort zone, to develop personally and professionally."

Dearbhla Walsh
Graduate Cost Manager

What we do

Our services are tailored for your project, delivering maximum efficiency from inception to completion. We specialise in key areas, to provide faster project delivery, greater cost efficiency and maximum value.

Project Management
Delivering project success through strategic planning and stringent controls.

Cost Management
Ensuring better value for money at every stage of the construction process.

Program Management
Managing a network of projects simultaneously in order to deliver program success.

Project Controls
Controlling every aspect of a project to ensure maximum performance and long-term success.

Procurement
Adopting the most appropriate strategy to suit both public and private sectors.

Supply Chain Management
Providing efficient logistic strategies to streamline the delivery of equipment and services.

Health and Safety
Assuring compliance, and providing design teams and clients with expert advice and independent review.

Consultancy
Providing professional, hands-on advice and guidance throughout every stage of your project.

Planning and Scheduling
Controlling every aspect of a project to ensure maximum performance leads to long-term success.

Our values

Over the years we have developed a way of working that ensures quality and consistency in how we operate. Our five core values inform what we do and how we do it:

Partnership

We are focused on our clients' goals and work closely with them to achieve the best possible results. We believe in collaboration. When we share our experiences and combine our expertise, we can achieve great things.

Progress

We believe in always moving things forward and finding better ways of working. We're not just focused on what we do but also on what we can achieve. We are driven by success – for our clients, our partners and each other.

Integrity

We are fair, open and ethical in everything we do. We challenge things we believe to be wrong and are open to being challenged by others. We take pride in the quality, accuracy and independence of our work.

Resourcefulness

We work around the world, in diverse sectors and for clients with distinct ambitions. This requires us to act effectively and creatively in new and complicated situations. We rely on our individual and collective abilities to resolve any challenges we may face.

Long-term view

We believe in working sustainably, and so we build enduring relationships with our clients and partners. We work together in a way that is respectful and considerate of each other and the wider society in which we live.

Our culture

Our **bold ambition, honesty** and **confidence to deliver,** together with our commitment to cultivating **meaningful relationships** is what sets us apart.

Our distinctive culture has always played a key role in our success. As a business we want to be intentional in maintaining and working within the principles of our distinctive culture.

Own and empower

We have a highly developed sense of responsibility for identifying problems, finding solutions and executing with excellence. As individuals and teams, we are free (and encouraged) to exercise our judgement to reach our goals.

Connect for good

We are team players, collaborating globally and locally to deliver exceptional results. We encourage and nurture relational rather than transactional business relationships, continuously building a totally inclusive working environment.

Embrace clarity

Our emphasis is on direct communication - our preference is always face-to-face, or to pick up the phone. We express ourselves clearly, honestly and effectively in our communication. We are pro-active in inviting and providing actionable feedback.

Lead by example

We believe in mentoring as a way to strengthen and develop ourselves and provide the resources, environment and flexibility required. We practice 'reverse mentoring' between junior and senior employees - every single person in Linesight has something to teach.

Bold ambition

We continuously develop our global team, with a shared drive and ambition to deliver exceptional results. We believe success is winning unreserved recommendations for exceptional work and impact. We always work with an eye on the future, whilst delivering on our commitments and objectives.

2018 A year in review

JANUARY

We launched our Purpose Built Student Accommodation (PBSA) Report at a private symposium in Dublin.

FEBRUARY

Patrick Ryan, Managing Director USA East Region, joined the panel at the Enterprise Ireland Leadership 4 Growth Programme, at the Consulate General of Ireland in New York.

MARCH

Celebrating International Women's Day across the globe. Our colleagues in Dubai showing their creative side!

JULY

Paul Brady took part in the Etape Du Tour, an annual amateur race on one stage of the Tour de France.

AUGUST

Richard Joyce, Managing Director, Linesight Ireland, celebrated 30 years in Linesight!

SEPTEMBER

14 members of the Linesight team from around the globe took on the formidable 700km Paris2Nice cycle, in aid of the Irish Youth Foundation.

APRIL

Shay Dahan, Director of our Israel operations, ran 500km across Israel in eight days to raise funds for Krembo Wings, a youth movement for children with special needs.

MAY

Des O'Broin became the fifth member of the Linesight team to be appointed President of the Society of Chartered Surveyors Ireland (SCSI).

JUNE

The appointment of our new Country Director for India coincides with the opening of our new office in Mumbai.

OCTOBER

Linesight teams from Dublin, New York and Singapore took on the Run in the Dark challenge in aid of the Mark Pollock Trust.

NOVEMBER

We marked the launch of our Build-to-rent (BTR) research report, with a breakfast briefing in Dublin that drew in over 70 high-profile industry stakeholders.

DECEMBER

A number of our colleagues celebrated passing the APC to become Chartered Quantity Surveyors.

Working with you wherever you are

With staff located across Europe, MENA, Asia Pacific and the USA, our reach is truly global. We have delivered projects in over 40 countries and are always exploring new areas of opportunity. We offer first-class consultancy on major projects across 13 specialist sectors, and we have developed a broad portfolio of innovative projects in every region.

- Commercial Development
- Commercial Fit-Out
- Data Centres
- Education
- Food and Beverage
- Healthcare
- High-Tech Industrial
- Hospitality
- Life Sciences
- Residential
- Retail
- Student Accommodation
- Transportation and Infrastructure

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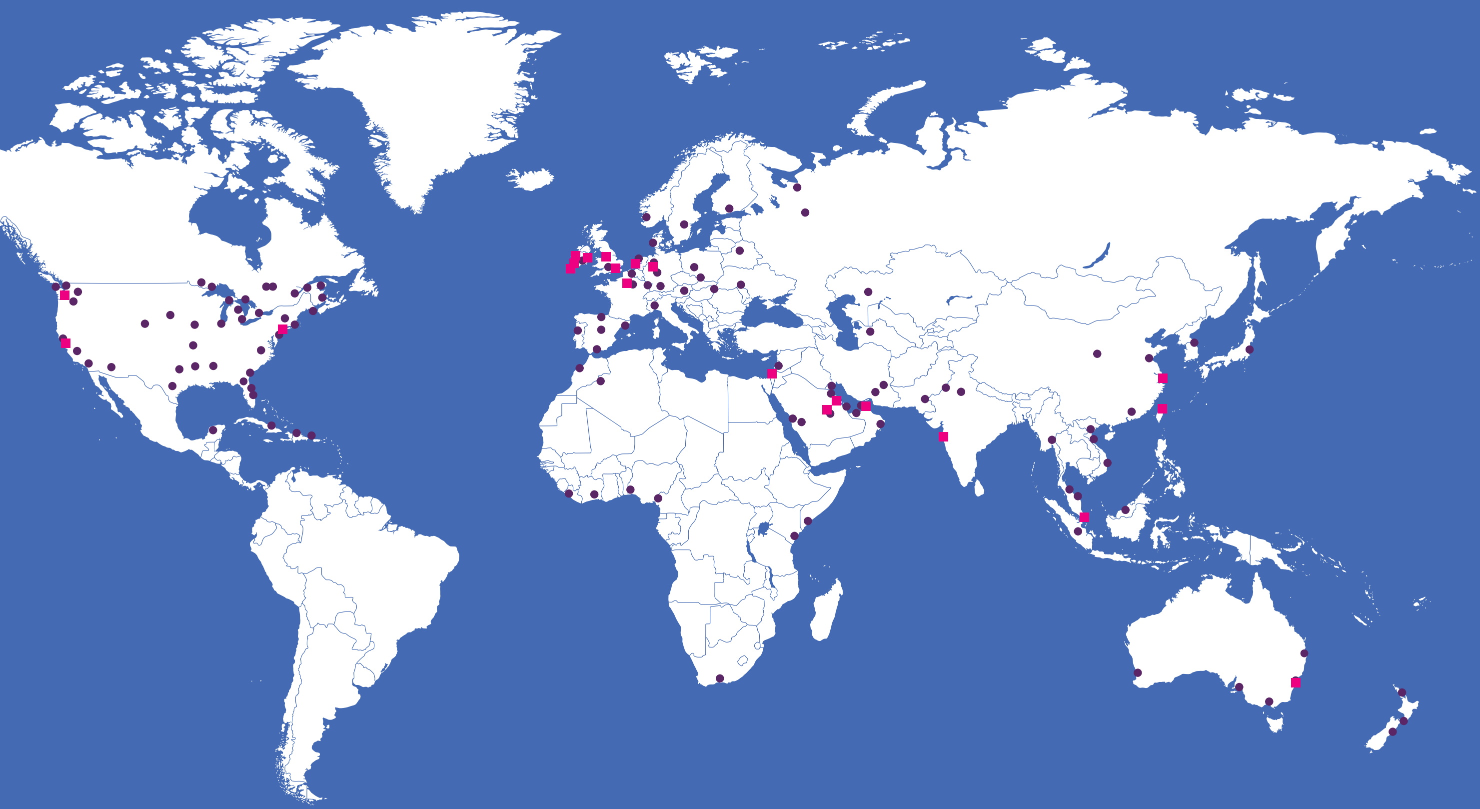

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