CONSTRUCTION IN 2022 AND BEYOND

NAVIGATING CONSTRUCTION'S CHALLENGING NEW LANDSCAPE

IDEAS | PEOPLE | TRUST

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CONTENTS

WHO WE SURVEYED

We ran an online survey of Construction sector businesses from 12 January 2022 to 18 March 2022. Respondents came from across the UK, operating in a variety of Construction subsectors, including mainly privately owned but also publicly listed companies. Participants included chief executives, managing directors, finance directors and other senior finance and business personnel.

INTRODUCTION

A WORD FROM **PAUL FENNER**, HEAD OF CONSTRUCTION

Performance in Construction from February 2020 (pre-COVID-19) to February 2022.

Sub-sector	%	
Infrastructure	25.1	▲
New private housing	3.6	▲
New public housing	(18.7)	▼
Private commercial	(27.8)	▼
Repair and maintenance		
– Private housing	19.6	▲
– Public housing	(13.5)	▼
– Non housing	10.4	▲

We kicked off our report last year by celebrating the Construction sector's resilience in recovering from COVID-19. That celebration was well deserved: Construction is arguably one of the industries that has rebounded most quickly from the impact of the pandemic, with most subsectors now close to or at pre-pandemic levels of growth.

Construction is delivering £110bn to the British economy, or 7% of gross domestic product, and providing 3 million jobs or 10% of the workforce. Overall, the sector has grown 1.1% at February 2022 when compared to pre-pandemic levels at February 2020.

There has been a mixed bag of performances from the sub-sectors of Construction as shown in the table opposite. Some of the winners are Infrastructure with 25.1%, primarily off the back of the Government's BUILD campaign, HS2 and motorway investments. Private housing has performed well as a result of stamp duty initiatives and general demand for housing stock. Repair and maintenance has generally done well as a result of DIY projects. Other areas that have performed well are warehouses, logistics and distribution, largely off the back of Internet sales and stock piling due to material shortages. Sub-sectors not performing so well are private commercial and office builds, particularly in London as a result of work from home practices.

Notwithstanding, the outlook for Construction looks bright. The sector weathered COVID-19 well, with some infrastructure works seeing barely any impact. It's not surprising that the sector feels optimistic as order books are filling up two or three years ahead. Some 47% of those surveyed responded they felt performance in FY21 is better than they expected and 90% felt the outlook for FY22/23 was positive. The test for the sector will come once those orders are fulfilled.

But just when you thought it was safe to get back to the building site, uncertainty once again rears its head. Added to several long-standing concerns for the sector, such as skills gaps and supply chain resilience, are new challenges such as a growing focus on ESG, climate change and sustainability, and ongoing materials price inflation, which at the time of writing was around 7%.

That's above the national average because building materials are among the goods worst hit by inflationary pressures. Steel, for example, at one point rose as much as 141.6% in price since October. In addition to the materials challenges and soaring energy prices adding to input costs, Russia's war in Ukraine - which continues as this report goes to press - means there is further unpredictability in this outlook.

Another issue is the VAT reverse domestic charge regulation that came into force last year. While welcomed by the UK Government for making it easier to tax larger companies, this can have a significant impact on working capital requirements for subcontractors. And it comes at a time when many players in the sector are trying to repay deferred tax and VAT liabilities, and CBIL bank loans accumulated over the last couple of years.

This could add up to a perfect storm for some Construction companies and cause real concern that a number of subcontractors may fail, further delaying the completion of contracts. After two years of seriously challenging conditions, the sector faces yet more issues in 2022. But there are still ways companies can cope, and this report outlines some of the options. I hope you find it useful.

EXECUTIVE SUMMARY

Optimism remains high after most companies performed better than expected last year. But labour and materials shortages are clouding the horizon.

91% of respondents feel quite or very positive about the prospects for Construction in the UK—**up from 87% last year**.

69% of companies are engaged in **digital transformation**.

HOW WAS BUSINESS PERFOMANCE IN 2021?

- better than expected 47%
- as expected 31%
- worse than expected 22%

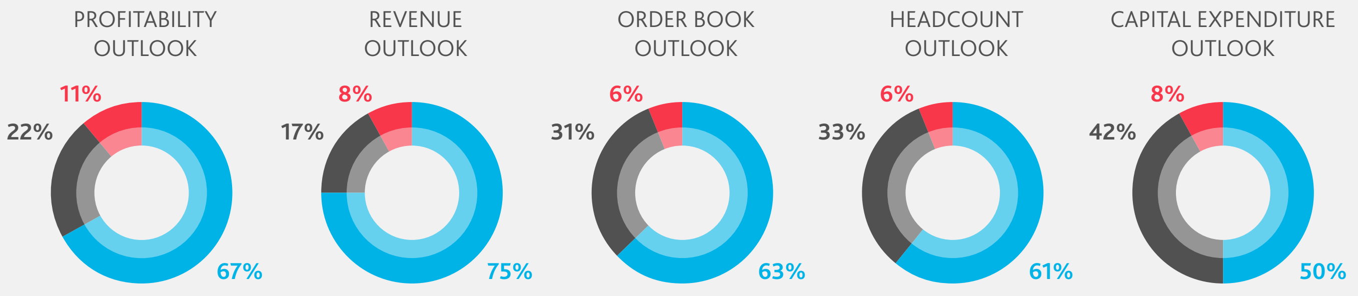
70% of companies have **difficulty recruiting people with the right skills**.

78% of companies offer **staff incentives**.

48% of respondents think their company's **carbon footprint** will decrease in 2022. Only 13% think it will increase. 66% of companies have carbon neutral targets.

PREDICTIONS FOR 2022

- Increase
- Stay the same
- Decrease



TOP 3...

...investment priorities in 2022

1. Recruitment 66%
2. Sustainability 39%
3. Digital transformation 33%

...challenges facing UK Construction in 2022

1. Labour shortages 75%
2. Materials shortages and pricing 70%
3. Supply chain resilience 50%

...skills challenges facing UK Construction

1. Gaps in knowledge and training 27%
2. Aging workforce 25%
3. Immigration 22%

What needs to be done to improve confidence in UK Construction?

(Top three responses)

1. Greater adoption of innovation and technology
2. Greater confidence in Government
3. Greater training opportunities

Reducing carbon emissions is the area of business performance that leaders think will change the most in the next 12 months.

THE CHALLENGE OF MANAGING GROWTH

LEE CAUSER, BUSINESS RESTRUCTURING PARTNER

Many consider the Construction sector to be booming and performing well in the current climate. But there are some worrying trends that are causing increasing unease and stress within the sector, and managing growth is bringing inevitable challenge.

Over the course of the last two years, corporate insolvency appointments in the Construction sector have been at their lowest levels for many years and anyone surveying a city centre landscape will inevitably see several cranes and general Construction activity underway. Therefore, from an external perspective, all appears well within a sector which looks to be booming and performing well.

However, the level of corporate insolvencies in the UK has been artificially low throughout the pandemic, across all sectors. There has been a significant level of support through various Government measures available and liquidity, which has supressed the number of insolvency appointments. One thing which has been consistent during the last two years with the pre-pandemic trends, is that the Construction industry has continued to top the insolvency league tables, with more corporate insolvencies than any other sector classification.

And this is a trend that is worryingly accelerating at quite a rate, with the number of Construction insolvencies in 2021 being 25% higher than the previous year. Even more concerning is that the first quarter of 2022 has resulted in more insolvency appointments in the Construction sector than any other quarter for 10 years. This is an alarming trend, with the vast majority being liquidations, meaning that these businesses ceased trading and their assets sold.

So what has caused this? There are many factors, for instance the requirement to begin repaying the additional debt burden that has been taken on during the pandemic alongside rent and HMRC deferrals. Inevitably, many companies borrowed to get through the last couple of years. Now they must pay that money back and have already spent it.

Plus, this is a sector where margins are thin, so current inflationary pressures can have an outsized impact. Simple economic principles of demand vs supply are having a significant impact across the sector. For instance, the scarcity of skilled resource is driving up employee costs, whilst material shortages are causing price inflation. In neither of these examples is it easy (or possible) for businesses to pass these increases onto their customers, resulting in reduced profit margins and less cash being generated.

One of the most common reactions is to chase revenue. There is a longstanding view that growing revenue should almost immediately generate profits and cash. Unfortunately, this view is misplaced and is one of the most common causes of failures – overtrading.

Unfortunately, as tempting as it may be to win new business, doing so without a stable working capital platform can be catastrophic. It is statistically proven over many recessions that more businesses fail as an economy exits recession rather than at the start of a recessionary period, for the simple reason that they run out of cash whilst chasing revenue and a growing pipeline.

The desire to grow can often lead to low-ball offers that can put further stress on margins. The business becomes overstretched, putting it at risk of defaulting on its contractual obligations because of circumstances beyond its control, such as supply chain problems (including the insolvency of a key supplier or customer) or workforce shortages.

Due to the low margins which exist within the sector, Construction companies are particularly prone to overtrading, which is the prime reason for the number of insolvencies in the sector being higher than any other. The current environment, with increasing inflation and continuing supply chain shortages, exacerbates the possibility of running into problems.

How can companies deal with the situation? The most immediate answer is to focus upon cash and profitability rather than revenue, making sure there is always a financial cushion available to guard against emerging risks. Revenue is vanity, profit is sanity – and cash is always king.

Being the biggest isn't the most important thing. Having the right governance and strategy is crucial, and it is vital to focus upon what you know as fact rather than risk a dream becoming a nightmare.

CONTRACTING AMID CONTINUED UNCERTAINTY

OLIVER BACK, CONTRACT AND COMMERCIAL RISK PARTNER

Things were looking so good at the start of the year. In February, boosted by pent-up demand, growth in the civil engineering and residential Construction segments was at its strongest in eight months.

And even as of early March, the UK Construction Purchasing Managers Index, which measures activity in the sector, was at 59.1, one of its highest levels in years and a clear measure of expansion in the sector.

The Construction industry has a right to feel confident, having weathered Brexit, a global pandemic and an ongoing supply chain crunch. The worry is whether the economic shocks arising from the Russia's war in Ukraine could be a bridge too far.

Rising energy and commodity costs—and even the availability of heavy goods vehicle drivers—are starting to affect the industry. It is unclear how well the sector can weather this latest storm. To an extent, the events of the last two years have forced Construction players to build new levels of resilience into the supply chain, perhaps putting the industry in a better position than it might otherwise have been.

Is there anything else companies can do? Larger businesses may have the ability to stockpile materials as a guard against commodity pricing inflation. For most, however, continued prudence in managing cashflows will likely be the most desirable strategy.

This traditionally involves staying on top of contracts and ensuring debtor days are reduced as much as possible. In the current climate, however, it may be vital not to put too much pressure on players that are already under stress. Hence, larger Construction firms should be monitoring key supplier resilience and reviewing financial indicators across the supply chain.

Elsewhere on contracting, it will be more important than ever to ensure there are mechanisms that allow for commodities and materials inflation to be appropriately shared across the value chain, to help safeguard the profitability of projects.

Perhaps more obviously, it also makes sense to price current uncertainties into tender estimates. Finally, it would be sensible to look for areas where you can build flexibility into contracts. Take schedules: is there an opportunity to bring work forward or put it back to accommodate the availability of workers and materials, for example?

On this point, there may be more room for negotiation with customers and suppliers than there has been in the past. While the room for manoeuvre will differ from one contract to another, if there is one thing that is clear in 2022 it is that the industry needs to continue working together to thrive.

THE SECRET TO ASSET-BASED LENDING IN CONSTRUCTION

DREW JOHNSON, ASSET-BASED LENDING ADVISORY SERVICE DIRECTOR

Prudence is key as we go through the third year of this uncertain decade. While the UK Construction sector remains rife with opportunities, the global outlook means caution is advised, with an eye to maintaining strong cash positions and reducing risk.

Against this backdrop, many companies may feel moved to shore up finances with some form of borrowing. But going to the bank can be costly, particularly with interest rates on the rise. And banks only have limited appetite for leveraged lending in Construction.

Traditionally, the Construction sector has had limited options. It was seen as too risky for many asset-based lenders, which elsewhere are happy to offer finance at more competitive rates than banks.

This has left the Construction industry acting as a bystander while the asset-based lending industry has evolved. Today's lenders are, however, as sophisticated as investment banks, offering complex products secured by assets that can range from debtors or stock to intangible intellectual property. And gradually, some of them have come round to looking at Construction with new eyes.

The traditional view that asset-based lending is not open to Construction is no longer true. A growing number of lenders are comfortable dealing with the sector, potentially opening a new route to competitive finance.

This does not mean Construction firms can tap into asset-based lending easily, though. Construction is still seen as high risk, not least because of the interconnectedness of the sector—where one business failure can spark others along the supply chain—and the complexity of contracts, with staged payments and liquidated damages as common feature.

Hence, lenders dealing with the sector typically tend to advance a lower proportion of the asset value than might be experienced in other industries. Lenders will look more favourably at those businesses that can demonstrate robust and accurate management information, stretching back several years, before even making a commitment.

There are ways to smooth the process, however. One strategy that Construction firms might not be aware of is that asset-based lenders will be happy to look at groupwide operations. Hence, if the group includes a manufacturing arm, then it could be used to secure asset-based finance at favourable rates which could then be made available to the Construction business elsewhere within the group.

Another recommendation is to review contracts and negotiate those terms which could cause issues for potential lenders, such as the non-assignment of debt.

The bottom line is that tapping into asset-based lending is now a realistic prospect for companies in the Construction sector, but this remains an avenue that needs to be approached with respect. To improve your chances of success, it will pay to speak to an adviser about how you can put together a convincing case backed by detailed financial data.

TRACKING THE IMPACT OF EMPLOYMENT TAX CHANGES

JOHN CHAPLIN, EMPLOYMENT TAX PARTNER, AND **ALISON HAWKES**, EMPLOYMENT TAX MANAGER


JOHN CHAPLIN


ALISON HAWKES

As a sector that employs around one in ten workers in the UK, Construction is highly exposed to changes in employment tax. And the last couple of years have seen big changes affecting the sector.

Perhaps the biggest one is the change to UK off-payroll working rules introduced in April 2021. These apply to companies with a turnover of more than £10.2m, balance sheet of more than £5.1m and more than 50 staff.

In essence, the rule change obliges these companies to assess whether contractors are in effect working as employees and requires the contractor to be treated accordingly for tax purposes. Construction, where contract working is rife, is very much in the spotlight over this.

Getting the contracting party, rather than the contractor, to report on employment status might not seem a big deal—and could even be seen as simplifying life for contractors. But it poses a challenge for Construction firms that are finding it hard to recruit workers, because being treated as an employee may result in the worker paying more tax than as a contractor—and not keen to make the change as a result.

This leaves the contractor with an unenviable set of choices: pay the worker more to make up the difference, carry on treating the worker as a contractor and risk a fine, or stick to the budget and the rules and hope the project does not fail for lack of workers.

Balancing tax and commercial risk is difficult in this context, and can be helped with guidance from an experienced adviser. And off-payroll is just one area of employment tax evolution that Construction companies need to be aware of.

Another, also related to the tightening of talent, is the tax treatment of expenses involved in agile working. As companies source workers from farther and farther afield, they may not be aware that some of the expenses involved—covering transport, hotel bills and so on—are taxable. If this cost is not included in project budgets, then it can create liabilities down the line.

To avoid this, it is important to have clear policies and rules, and to make sure project budgets provide an accurate reflection of costs—including those relating to tax.

On the plus side, moves to improve the sustainability of UK transport have led to the introduction of a tax break on electric vehicles provided as a benefit in kind. This brings the tax rate down to 2%, compared to up to 35% for an equivalent petrol or diesel car. This can be included as part of a salary sacrifice scheme, offering significant tax savings for the employee and some National Insurance savings for the employer.

These rules are due to stay in place for three years and represent a rare bright spot in an otherwise generally hardening tax environment. As the Government seeks to balance the books after spending to deal with COVID-19, staying close to your tax adviser is more imperative than ever.

WHY INNOVATION IS MOVING UP THE AGENDA

CONOR MANSFIELD, INNOVATION AND TECHNOLOGY SENIOR MANAGER

The chancellor is increasing the spotlight on innovation with his priorities of capital, people and ideas, but he also wants more return on his investment.

Sustainability, digitisation, supply chain disruption and changes in regulation are just some of the factors driving change in Construction. These drive the development of new technology, products and processes, which can qualify for Government support through R&D tax relief.

The Chancellor has referred to Research and Development Tax Credits as a key innovation driver and recognised the economic growth this generates. However, a recent National Audit Office report, highlighted the growing cost of the relief and questioned the level of return on investment it generates. The report also raised concerns around potential abuse of the reliefs and poor-quality claims leading to greater than expected costs – currently estimated at around £336m per year. In difficult times for the economy, it is no surprise that the Government is taking action on both fronts.

Firstly, HM Revenue & Customs, have recruited 100 additional inspectors specifically to open enquiries into R&D claims. Alongside wider reforms from 1 April 2023, a raft of administrative measures will also be introduced to counter perceived abuse of the R&D regime (including measures aimed at 'advisers, many with no background in tax, … [who] submit numerous dubious claims').

Secondly, reforms to the R&D qualifying criteria will come into effect from 1 April 2023. The good news is that data and cloud computing costs are being brought into scope along with costs for 'pure maths' that support projects. However, the most significant change will be new rules to exclude non-UK staff costs from future claims, with a handful of exceptions that are currently under consultation. The aim is to ensure that the relief encourages R&D work and expertise to be based in the UK because of the overall benefits this brings to the UK economy.

Clearly, this will have a major impact on businesses who currently outsource R&D overseas, but as a relatively domestic sector the impact on Construction is forecasted to be less severe than other sectors.

What has not changed is that for a project to be considered R&D, the sponsor must be solving a problem to seek an improvement in some area of science and technology. This could relate to designs, systems, methodologies and more, and does not necessarily imply creating something completely new - improvements to existing technology are acceptable. In solving the problem, the sponsor must also face scientific or technological uncertainty, typically requiring design, testing and modelling activity to be resolved. It is also important to consider who exactly is carrying out the R&D, and if any external funding associated with the project may impact the eligibility of the expenditure.

Construction companies will increasingly want to be aware of these nuances because of the increased enquiry activity from HMRC. Likewise, from 1 April 2023 the additional enhanced compliance and enforcement measures will create more 'hoops to jump through' for some businesses claiming R&D tax relief and the changes to qualifying costs will add to the complexity of claims. So, it is crucial that companies ensure that their claims are robust, accurate and beyond reproach to ensure the flow ongoing financial support from the Government.

Support from a reputable adviser to test, validate (and where necessary de-risk) claims before they are submitted will be increasingly important, as inaccuracies in claims will lead to delays and may damage the company's reputation with HMRC.

IGNORING CHANGES TO VAT IS NOT AN OPTION

RICHARD DALTON, TAX PARTNER

You may have had encounters with HMRC in the past that led you to think tax affairs were open to negotiation. This could particularly seem the case with VAT, which is regarded by many as a mainly administrative exercise until you get the final customer.

But you should not rely on HMRC being pragmatic in the current climate. With Government understandably struggling to offset the massive outlays of recent years without significantly increasing the tax burden on consumers, HMRC inspectors are seeking to apply interest and penalties to errors that they may have previously overlooked in the interest of education and encouraging compliance.

This poses a challenge for Construction companies because the sector has faced significant changes to VAT rules that could easily trigger an investigation.

The biggest of these, introduced in March 2021, is the VAT domestic reverse charge procedure. Initially there were concerns this might affect cash reserves in the industry, but in fact what appears to be emerging is a more subtle yet equally vexing problem.

In essence, to comply with the new rules an end user—broadly defined as the last entity to receive Construction goods or services in the industry value chain—must confirm to its contractors that it is:

- Registered with the Construction industry scheme
- Registered for VAT
- The end user.

Note that in the legislation and its accompanying guidance there is no obligation on end users to confirm their status as such to contractors, and not doing so could offer significant cashflow benefits. In practice, however, the effort involved in acting as a non-end user for VAT purposes may well outweigh any cashflow advantage.

But confirming an end-user status can have unexpected consequences if HMRC's process is not followed to the letter. HMRC inspectors may request a copy of the written confirmation of end-user status that should have been sent to any contractor submitting a VAT invoice. If there is no written confirmation, then the inspector may consider VAT has been charged incorrectly, meaning recovery of the tax could be challenged and penalised with interest and a penalty.

Another area of VAT compliance that Construction companies should be aware of are the Making Tax Digital rules. As with VAT domestic reverse charge, this digital workflow guidance is an area where it might be easy to slip up, triggering scrutiny from HMRC that could absorb valuable management resources.

If you are happy dealing with that burden, fine. But it is important to remember that failure to comply with today's complex VAT rules is unlikely to be treated leniently. For companies that would rather avoid the hassle of dealing with VAT issues, it pays to make sure everything is shipshape before the taxman comes calling.

GETTING SCHOOL LEAVERS INTO CAREERS IN CONSTRUCTION

KATHRYN LENNON JOHNSON, FOUNDER, BUILT ENVIRONMENT SKILLS IN SCHOOLS

Construction will need 216,800 new workers by 2025, according to a Construction Skills Network study published last [year](). With immigration to the UK dropping [almost a quarter]() from 2020 to 2021, it would make sense for Construction companies to look at school leavers in the search for talent. Most are not, however.

Only around 10% of employers in the Construction industry are engaging with schools, meaning almost 300,000 companies are missing out on a valuable talent pool. When Construction bosses complain that school leavers do not want to work for them, that's hardly surprising. Most school leavers have no idea these companies exist.

The Construction industry has effectively entrusted the job of attracting school leavers to a handful of major contractors. While these companies may be able to offer attractive career prospects, it is a stretch to imagine they can convey the diversity of roles, responsibilities and employers present in the modern Construction sector.

The limited connection between Construction employers and schools also does a poor job of transmitting a sense of the more exciting aspects of the industry, such as its role in promoting sustainability or creating major infrastructures.

Against this backdrop, it is hardly surprising that school leavers that do not go into further education are usually attracted to alternative industries, from technology to finance. But it needn't be this way. With the right mindset, Construction companies can sell themselves to school leavers just like they sell themselves to clients.

School engagement comes down to marketing. It is marketing to prospective employees rather than prospective customers, but the principles remain the same. It involves:

- Knowing your audience by talking to schools and finding out about them
- Telling stories that are relevant to the audience, not the speaker
- Using channels that already exist, and that the audience uses, such as technology and gaming, social media, virtual work experience, and careers events
- Tracking feedback and metrics so you can make improvements over time.

The beauty of treating school leaver recruitment as a marketing exercise is that it forces you to evaluate your business through a fresh pair of eyes, recognising for example that a sense of purpose at work may carry greater weight than a starting salary.

When Construction becomes less about laying bricks and more about building futures, it will become more attractive for school leavers. But the sector may need to engage more with school leavers to see that.

- Built Environment Skills in Schools uses digital and gaming technology to support careers messages, including on-demand virtual work experience and a partnership with the Cities:Skylines city-building simulation platform from Paradox Interactive.

ESG AT RAMBOLL: STILL KEY AFTER ALL THESE YEARS

PHILIPPA SPENCE, UK MANAGING DIRECTOR, RAMBOLL

Environmental, social and governance (ESG) measures are getting a lot of attention now across the Construction industry. But at Ramboll this is nothing new. For the 76 years our company has been in operation, ESG has always been important.

RAMBOLL Bright ideas. Sustainable change.

A sense of social duty was baked into the business by its founders, Børge Johannes Rambøll and Johan Georg Hannemann, who wanted to contribute to repairing post-war Europe, with a strong ethic around giving back. This ethos led to the business being run as a foundation, which it remains today.

And the push for ESG excellence is as strong now as ever, in support of our mission to create sustainable societies where people and nature flourish.

More recently this focus has shifted to helping society ward off the ravages of climate change, and in 2022 the company went 'all in' on sustainability with a new four-year strategy.

Interestingly, it was the financial sector that first started pointing to the opportunity in this area. Back in the 1990s, we saw institutional investors developing voluntary initiatives such as the Equator Principles, which said that sustainability matters.

These institutions realised that if they did not make sustainability a priority then they could end up losing money, as risks such as floods and drought led to stranded assets.

We were keenly aware of this movement, and for a long time now have been monitoring Sustainable Development Goals and the impact we have on them. Now that ESG has gone mainstream, this depth of understanding of the issues makes it easy for us to scale up around sustainability.

It has also helped us to adapt to Government regulations such as the UK Environment Act, which has requirements for biodiversity net gain that all developers must achieve when they are designing schemes.

Similarly, if you are delivering public sector work nowadays you cannot secure contracts worth over £5m per annum without a carbon reduction plan. Every developer, every Construction company and every engineering consultancy must be able to future proof what they are doing.

At Ramboll, we may not have the scale of the largest players in the sector, but we differentiate on these points hugely.

We are working with leading infrastructure operators, developers, and contractors across the country on their landmark and pioneering schemes, delivering net zero in embodied and operational carbon, and using data to show the sustainable impact of decisions.

In addition, we are increasingly building circular economy into our designs, re-using where we can, and where we can't we are seeking to design for disassembly, including working with universities, building large-scale proofs of concept to validate the business case for future developments.

In February this year, Ramboll launched a four-year strategy, 'The Partner for Sustainable Change' which pivots all that Ramboll does towards delivering a sustainable future.

ESG AT RAMBOLL: STILL KEY AFTER ALL THESE YEARS

A key ingredient of the strategy is to offer clients alternatives on how to improve the sustainability of their projects, looking at decarbonisation, urban resilience, circular resource management and biodiversity enhancement.

Our Group Chief Executive Jens-Peter Saul noted how our focus on sustainable design and engineering is paying off for the business. “Over the last strategy period Ramboll has grown 35% and we have built a very strong sustainability offering across our markets,” he said.

I can confirm that delivering sustainable design and engineering solutions has been a brand differentiator for us and will be so even more in the future. It’s a huge opportunity. Globally, the Construction sector is responsible for 30 to 40% of natural resource use and 30% of greenhouse gas emissions.

Around 80% of the building stock out there will still be here in 2050, so this is as much about repurposing and retrofitting existing infrastructure as it is about new builds.

Within retrofitting and repurposing, what is critical is circularity: how we are going to upgrade our existing building stock in a way that does not involve depleting more natural resources. It’s a highly complex issue and there is a huge opportunity for innovation.

This is a real focus area for Ramboll and it’s what we are going to be increasingly well known for. For example, our research is supporting the adoption of circular principles and we have long pioneered the advancement of modern methods of Construction, like cross-laminated secondary timber.

This, coupled with digital tools supporting advanced decision making on the impact of using existing materials, will help us realise a resource efficient future. The Construction sector has a long journey ahead in terms of sustainability, but the direction of travel is clear—and at Ramboll we are keen to lead the way.

CASE STUDY: GROWTH THROUGH SUSTAINABLE INNOVATION

VERSARIEN IS GARNERING ATTENTION WITH A NOVEL WAY OF CUTTING CEMENT EMISSIONS

Many Construction techniques have endured largely intact since ancient times. But the time for change has come as Construction finds itself in a warming world—and with a 39% share of global carbon emissions, almost a fifth of which comes from Portland cement.

Clearly, anything that can reduce the use of cement could have an impact on climate change. One option is to dispense with cement in concrete and use an alternative binder instead. This alkali-activated concrete has its own problems, however. It suffers from slow development of strength, which requires longer post-pour curing periods, prolonging build schedules. It also has issues with porosity and chloride migration (salt ingress).

Enter Versarien, an AIM-listed engineering technology company which has discovered that adding graphene to alkali-activated concrete overcomes the concrete's shortcomings and makes it a viable alternative to mixtures using Portland cement.

Better still, the graphene-enhanced mix is stronger than traditional concrete, so less is needed to achieve the same structural performance. **Studies have found that just a small amount of graphene could halve the amount of cement needed in concrete**.

One challenge for Versarien is that current building regulations do not allow concrete mixtures to be altered to this extent, so the company is leading industry attempts to update the regulations. Another challenge is that large cement makers are highly protective of their existing processes and assets.

That hasn't stopped Versarien from attracting attention, particularly as Governments impose net-zero emissions targets on the Construction sector. "In the last year, especially, everyone's been knocking at our door," comments Stephen Hodge, the company's chief technology officer.

Versarien, which is also pursuing graphene technology applications in sectors outside Construction, has positioned itself in a rapidly expanding market through international expansion. In 2019 it set up an office in the US and in 2020 it established an outpost in China and bought a South Korean business with 130 graphene patents.

With the US and European markets expected to grow rapidly in future, Versarien is looking to expand its graphene production process tenfold in 2022, to 100 tonnes a year. The company is aiming to make graphene-based concrete competitive with traditional supplies.

"We're a science-driven company, but we're commercially pulled," says Jim Barnett, head of programme management for Automotive and Construction at Versarien. "We work with people to solve their problems. We don't want to be selling a commodity, we want to be selling a technological solution."

That seems like a recipe for success. And it is even more laudable for showing how smart UK innovation can create real business opportunity in Construction, while delivering lasting benefits for the planet in the process.

A MESSAGE FROM CONSTRUCTION YOUTH TRUST

PROUDLY SUPPORTED BY BDO

Construction Youth Trust is a forward-thinking charity whose mission is to support young people reach their full potential and take their first steps towards a rewarding working life.

We prepare young people for the world of work, support them to build their skills and confidence, and connect them with opportunities and employers aligned with their abilities and interests. We prioritise young people from disadvantaged backgrounds, under-represented groups and those facing significant barriers.

Our vision is a Construction and built environment sector that drives social mobility and delivers social value by inspiring and enabling the diverse young talent of 21st Century Britain to overcome barriers and build better futures.

In 2021 we reached over 16,500 young people, supporting 850 on long-term programmes.

For more information, please visit our website:
https://www.constructionyouth.org.uk

Thanks to those who completed our Construction sector survey. We have made a donation to Construction Youth Trust to support their work.

FOR MORE INFORMATION CONTACT OUR DIGITAL MEDIA EXPERTS

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