



EMBRACING THE UNKNOWN

PRAGMATIC DESIGN

Q1: RESILIENT SECURITY





Embracing the Unknown

Alastair MacGregor

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WSP's Alastair MacGregor discusses integrating complexity and flexibility, educating clients, being Future Ready and advancing the industry.

DesignIntelligence (DI): Welcome, Alastair MacGregor, senior vice president and national business line executive for property and buildings at WSP USA. You assumed your position in 2022. Can you describe your role, your responsibilities and the company?

Alastair MacGregor (AM): WSP is one of the world's leading engineering, environment and professional services firms, with approximately 15,500 people in the U.S., and over 66,000 globally. I joined the company this summer to lead our property and buildings business line in the U.S. It's a multidisciplinary team of roughly 1,600 professionals that includes core engineering design disciplines (MEP and structural) and a variety of specialist design teams, ranging from acoustics and commissioning to smart building and sustainability specialists.

DI: Our annual theme for 2023 is Pragmatic Design. After COVID-19 and political, social and economic concerns, we've had time to reflect. Now how do we move to action? In the first quarter, our theme is Resilient Security. How do we bounce back stronger and better than we were before, with more confidence amid uncertain times? We can apply that question to our firms, systems, cities, infrastructures and projects. Let's start in the middle of the spectrum. How are you approaching the subject of being stronger, more resilient and more certain? Can you share some strategic initiatives?



Where it gets interesting is that we have to be able to do this early in the process, with lots of inherent unknowns. This is where engineers historically get uncomfortable. Our teams are quickly realizing they have to embrace the unknown and integrate flexibility into our process and our design solutions.



JS: The pandemic has raised awareness of the importance of what we do as designers of the built environment, and the impact the built environment can have on the health, business and societal needs of its occupants and community. Similarly, the elevation of the carbon conversation since COP26 continues to empower our design teams to elevate decarbonization as a design goal.

Combined with our internal transformation within WSP USA's property and buildings business to a national practice focused on complex sectors and problems, you get a perfect storm to take advantage of the bold foundational pivots that have occurred.

Our teams are coming out of the pandemic stronger, not because they are more sure, but because they are more comfortable. They can adjust to being less certain about the future and understand that a critical skill going forward will be the ability to embrace the unknown and design for multiple futures.

The recent events resulting from the pandemic, including an increased awareness of environmental, social and governance (ESG) goals and the environmental tipping point we have reached around carbon, have made us realize our teams need to embrace a similar five Rs approach to our design thinking and our organizational structure as a national practice.

DI: At a project level, creating engineering solutions across a broad spectrum, has the recent climate caused a rethinking of the classic engineer's mindset, which I would stereotype as: "Wait until all the criteria are firm and design a solution optimally, one time, to multiple decimal places." Might you be looking to faster, more flexible, more adaptable solutions now in a more volatile climate, solutions that are free to respond and adapt to market conditions and change?

AM: Whether we are talking about the pandemic or the multitude of climate events in the last five years alone, what were historically seen as black swan events now need to be planned and treated as highly likely over the life of a building.

Where it gets interesting is that we have to account for this early in the process, with lots of inherent unknowns. This is where engineers historically get uncomfortable. Our teams are quickly realizing they have to embrace the unknown and integrate flexibility into our process and design solutions. On the process side, digital design tools are allowing us to rapidly prototype the performance of strategies much faster and earlier. We also are actively exploring the concept of productization within building design.

In our design solutions, our teams now need to test building performance against future weather conditions, evaluate how the building can enhance operational resiliency and support fundamental use cases, for example office buildings transforming to labs, and enabling future fuel-switching. At WSP we call this “Future Ready” — preparing today for a world that will look and feel substantially different tomorrow.”

In fact, I am just finishing co-authoring a book for WSP on this very subject, entitled “Future Ready: Your Organization’s Guide to Rethinking Climate, Resilience and Sustainability,” which will be released by Wiley publishing in May. It’s an in-depth look at how increasingly dynamic climate-related shocks and stressors require rethinking the way organizations assess and mitigate risk, decarbonize operations and assets, and plan and design more resilient infrastructure and buildings. We offer WSP’s philosophy and integrated approach to addressing these challenges for those looking to start on, or continue down, a path to a more sustainable future.

DI: Your book sounds exciting. New approaches might include partnering with new kinds of teammates, radical investment in new technologies, knowledge management systems or new incentives and delivery systems. Are you investigating any of these?

AM: Through WSP’s Emerge program, we are actively looking for innovative startups we can collaborate with. Many are sustainability focused and bring exciting possibilities to the table for consideration.

By pairing participants’ product teams with our in-house subject matter experts, we give startups an opportunity to pilot and refine their products, services and technologies with WSP and gain access to our broad client base. For us, it is about creating new markets, offerings and client relationships. The world is changing fast. Programs like Emerge help us and our partners stay ahead of that change.

DI: Sustainability has become a given in design and construction projects. Owner RFPS require it. Governments have legislated energy codes for decades. But what’s next? How can we do more? Too often, we cite owner contracts or goals as tying our hands. How can engineers (whether the prime consultant or subconsultant) exert more leverage in leading the charge? Can you cite some examples?

AM: The pivot to carbon has expanded the challenge in an exciting way. Embracing generic energy-efficiency measures has been exposed as table stakes. Operational resiliency, occupant well-being and whole-life carbon expand the thinking and expectations of a truly high-performance building. In doing so, we are often able to justify bolder sustainability strategies that may not pass muster in traditional cost-benefit analyses.

Strategies that were seen as exotic, such as electrification, are now seen as foundational enablers to low carbon futures. We are even seeing more complex building types, like hospitals, make this leap. The pivot to carbon expands the conversation. It moves us away from the generic “sustainable strategies” and requires us to really understand the project locality. Whether it is the local grid carbon factor, the passive cooling potential or the availability of mass timber to decarbonize the structure, the conversation needs to get more local and personal to the community into which our designs will be integrated. To that end, understanding the supply chain or other external variables become key design considerations.

Embodied carbon (EC) is the next big push — and it isn’t just a building fabric conversation. In some buildings the EC of the MEP systems can be greater than the building structure and façade over the building life, due to periodic replacements. While EC data is still in its infancy, we are seeing exponential

growth in its availability across multiple material types. Where it isn’t readily available, proxy cost-based calculations are being developed in the interim.

These considerations make for more exciting design challenges for our teams to tackle, but they also increase the complexity for nontechnical clients to embrace. This means our engineers need to learn how to translate complex technical problems and solutions into messaging that resonates with client decision-makers. Sometimes this means sustainability might need to take a back seat to another key client value, such as operational resiliency or risk reduction.

WSP’s team of innovation advisers meet that need by speaking the language of the C-suite: understanding their goals and values, translating them to complex problems for our subject matter experts (SMEs) to solve and communicating alignment of our final solutions to these goals. We are consistently seeing this approach help our clients take bold leaps.



DI: In a less secure business and world climate, what actions are you taking to ensure a more secure future for your organization? Are there new business models, service or product offerings in the works? As a leader, what are you working on to better control your own destiny?

AM: This is a topic I have been wrestling with for a while. I am a firm believer that multidisciplinary thinking and collaboration are critical to delivering the high-performance built environments necessary to enhance occupant well-being and effectiveness while also supporting our decarbonized future state.

Whether it is the evaluation of the impact a building form could have on the ability to use a mass timber structure to lower embodied carbon, or the integration of an active façade that enhances visual, acoustic and thermal comfort while reducing operational carbon, our engineers bring critical insight and expertise to enable informed client decisions. Only by embracing a true design partnership between architect and engineer can we achieve true high-performance design solutions.

Not every building can define a skyline. But in this new age, every building can and should be an icon — of performance, sustainability, mutual respect and hope. At WSP, we have termed this the “New Iconic.” Making this a reality is the unifying purpose that drives WSP’s built environment experts.

DI: What nagging issues do you face and how would you suggest changing them for the better?

AM: How do we tackle the existing building stock? How do we facilitate the more balanced evaluation of its transformation, rather than simply allowing for its demolition and starting from scratch? That’s arguably the easier option and is often perceived as the more efficient design approach. But how do we get in-

involved in early decision-making to help our clients make more informed decisions? These are just a few things that nag me.

We have challenged multidisciplinary internal teams to explore what level of reuse could be accomplished and where repurpose synergies might exist. For example, there has been much talk about the abundance of unoccupied office buildings being transformed to lab or residential uses, but bolder repurposing also is being explored, including transforming empty big-box retail buildings into data centers.

It is then our responsibility, along with the rest of the design community wrestling with this same topic, to educate the market as to what is possible. We need to dispel the misconception that renovation and repositioning of an existing building needs to be a compromise and can’t create the same level of high-performance built environment you can achieve with a green field site.

DI: Your company has been known recently for significant growth via acquisitions and mergers. What does the future hold in this area?

AM: In our property and buildings practice, we have worked hard to define the edges of the complex puzzle necessary to create the next generation of engineering design partner and have recognized that to fill it in often requires a mix of acquisition and organic growth to present our clients with access to the most inquiring minds and collaborative thinking. While WSP’s recent acquisitions cover a variety of disciplines and sector focuses, there is a common thread to all of them: They share our passion for building performance and supporting our clients in solving complex problems, often in complex markets. Our new colleagues are helping us expand our geographic reach. Ensuring a cultural fit with these new employees has been critical and has led to strong organic growth once they are integrated into our team.

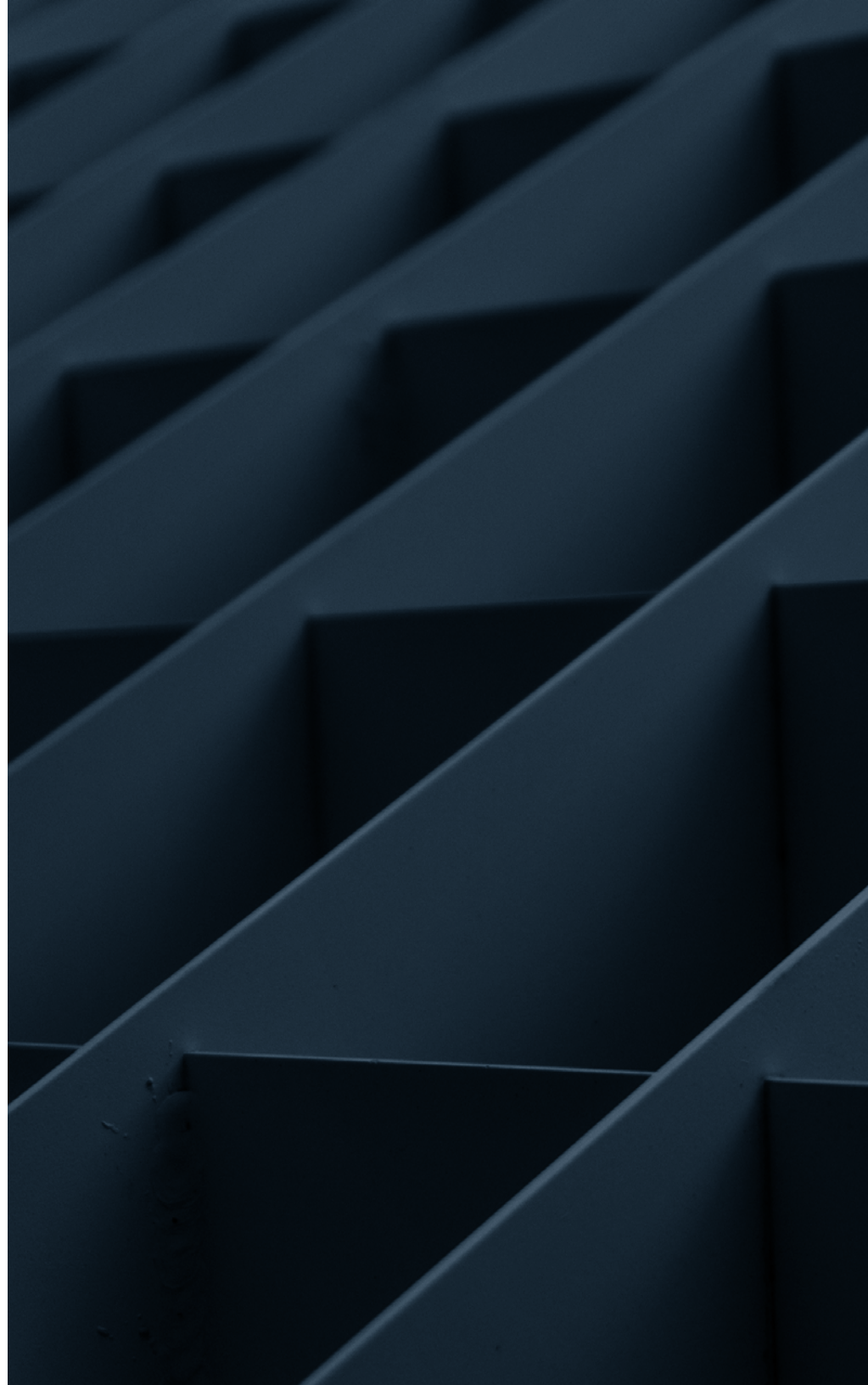
Is acquisition part of our practice's future growth? Probably. But providing our existing teams with opportunities to grow is just as important.

DI: What's your future vision for the firm? What might WSP look like in 20 years?

AM: In our U.S. property and buildings practice, our goal is to crack the nut many large, multidisciplinary consultants have failed at historically. Through the creation of an integrated engineering platform and an associated digital design approach, we will continue to look beyond today's questions to find tomorrow's answers.

We want to provide value by enabling our architectural partners to focus on creating iconic designs and providing our clients the confidence in delivering on their ESG, well-being and operational goals, all via data-driven decision-making. We are an engineering partner that takes responsibility for some key design levers — carbon, well-being, operational resilience.

A consequence of taking greater ownership is the ability to consider the design process, and the building, through a different lens. Specifically, the productization of our buildings. Simplifying connections, reducing parts, standardizing operational sequences, integrating supply chain information into decision-making — these are all common practices in other industries and areas where the construction industry is playing catch-up. WSP has several clients around the world pushing this idea. In those cases, we are helping develop design catalogs that provide greater consistency, streamline deployment repeatability and enable greater confidence in their carbon performance.



DI: What should your ideal client look like?

AM: Our focus is on complex sectors and complex problems like decarbonization and creating connected healthy environments. It's also on developing long-term relationships with clients who value a partner who is passionate about solving these problems and creating high-performance built environments. In these relationships, we can move from good consultant to great partner, look around the corner and leverage our global insight to explore opportunities and challenges our clients may see two or three years from now.

DI: What do you want your legacy to be?

AM: We embrace the responsibility that comes from being a global leader to take on the tough issues like decarbonization. We want to create early wins to build momentum and confidence in the industry so we can push beyond business as usual and achieve these bold goals. If I was to look through a future legacy lens 20 years from now, I'd want to proudly look back 30 years and say we were part of the movement that helped decarbonization transition from a niche goal of impassioned clients to something getting delivered at a national and global scale as business as usual.



In resilient infrastructure consulting, it is well understood that resilience is complex – hence the definition of the five Rs: robustness, responsiveness, redundancy, resourcefulness and recovery.



Alastair MacGregor, CEng LEED AP FitWell Amb, is senior vice president and national business line executive for property and buildings at WSP USA, an engineering, environmental and consulting firm headquartered in New York City, with more than 16,000 employees practicing in 300 cities. WSP USA is the U.S. operating company of WSP, one of the world's leading engineering, environment and professional services firms. Recognized on Fast Company's Brands that Matter List for 2022 as a top community-minded business, WSP USA brings together engineers, planners, technical experts, strategic advisers and construction management professionals who are dedicated to collaborate in the best interests of serving local communities. WSP USA designs lasting solutions in the buildings, transportation, energy, water and environment markets. With more than 15,500 employees in 300 offices across the U.S., we partner with our clients to help communities prosper.