

LOOKING AHEAD

As projects become more complex, Hazel Woodcock believes a systems approach is the only way to ensure a quality outcome. **Rob Hakimian** reports.



In each element of a modern infrastructure project, there are many interconnections to consider and decisions that affect them can have innumerable consequences for delivery and outcome.

This complexity needs a modern approach, which is where systems-based thinking comes into play, says Costain chief systems engineer Hazel Woodcock.

The systems approach ensures that all stakeholders' desired outcomes are considered at every step along the way and that no decision is taken without fully considering the consequences.

"It's not the outcomes that are critical. It's the decisions that are critical," she explains. "So, all of the decisions will affect the outcomes, you've got a number of outcomes, you need to understand what you want in the end. And all of the decisions you make, have the potential to prevent you from meeting one of your outcomes. As a result, it's not about which outcome is critical."

She describes each decision as a waypoint on the path to achieving a high level plan. To ensure the best choice is being made, the systems approach delays decisions until the "last responsible moment" so that all potential alternatives and impacts have been fully explored

and understood.

For the best possible results, a systems approach should be taken right from the small, initial decisions and carried on throughout the project.

"If you're right at the beginning, you've got this huge and exciting space of thought to play with," Woodcock says. "If you're well into a project, then you're very much constrained – you've already made decisions that have set your path."

But if there are still crucial decisions to be made, it is not too late to apply a systems approach to guide a project more efficiently to its conclusion.

Woodcock has previously implemented the systems approach in the defence and automotive sectors, but she sees infrastructure as the next beneficiary.

"We're getting to that change in infrastructure where we definitely need

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Woodcock:
Clients are increasingly asking for a systems approach

to be thinking more in systems," she says. "We want everything to be connected up. We want to understand the things that we're building better."

Applying the systems approach to civil engineering has been challenging, as it requires a culture shift in the sector.

"We're asking our engineers to slow down and not get into the detail yet – but engineers love detail," Woodcock says.

Through the systems approach, engineers are asked to wait until all relevant decisions are settled before they can plough ahead with the next step.

"Then when you get to that bit, you'll be doing it a lot quicker because you'll have all the answers up front," she says.

Woodcock believes the main hurdle to overcoming this shift is communication.

"We need to adapt our language of systems engineering so that it's understandable by the primary civils world," she says.

Infrastructure clients also seem to be acknowledging the added value offered by the systems approach. Woodcock says they have been requesting the implementation of the approach on some projects. "That's hugely encouraging," she says. "Because it means we've got that opportunity to make things so much better." **N**