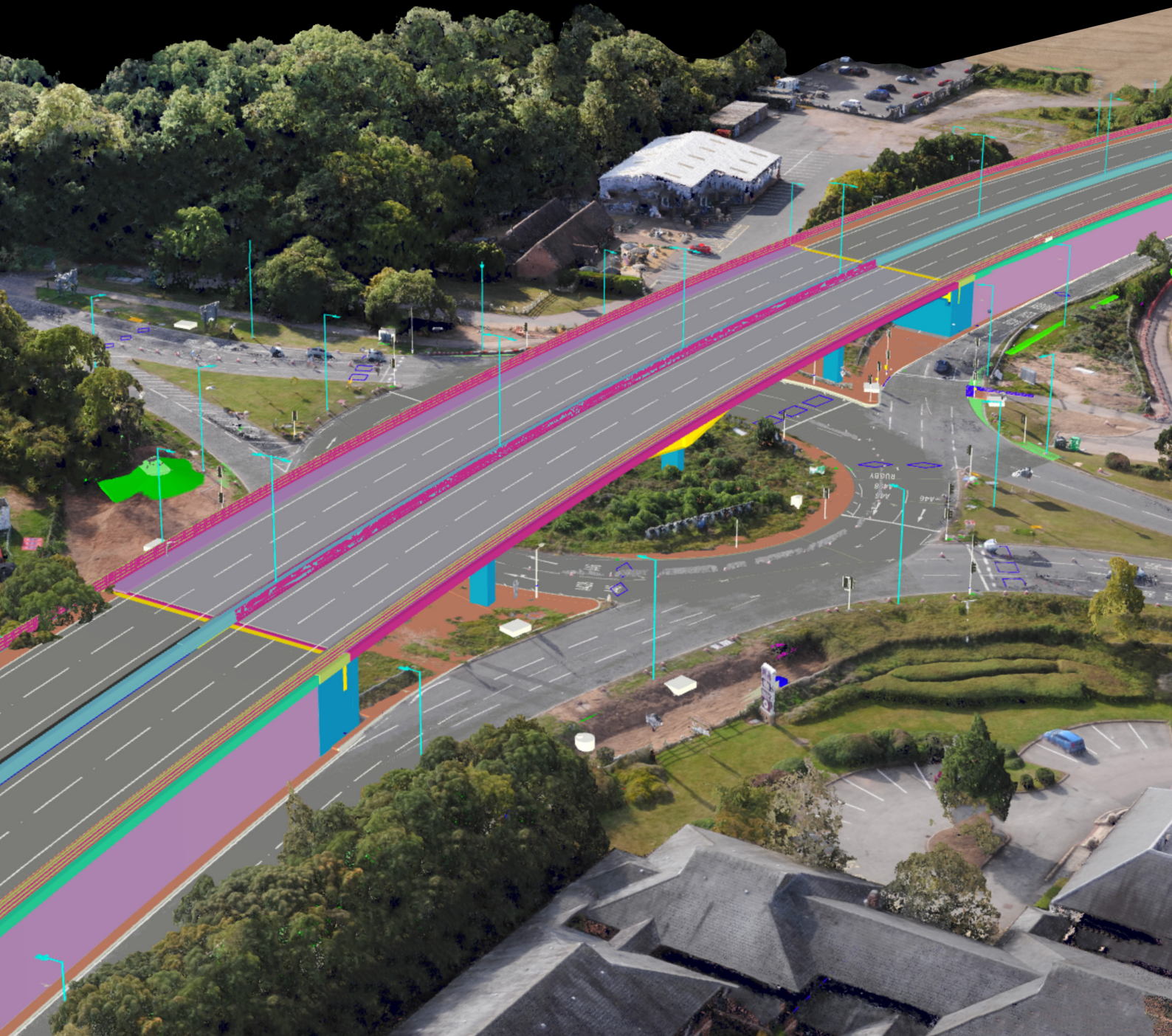


# How A46 Binley achieved better, faster, more data-driven decisions

Project  
A46

Location  
Coventry, United Kingdom





# Summary

As part of the UK government's £15.2bn road investment strategy, Octavius Infrastructure, on behalf of National Highways, was tasked with improving the Binley junction along the A46 in Coventry. To support the project, Octavius wanted to find an innovative solution to minimise risk on site.

Sensat partnered with Octavius to support the build phase which started back in 2020 to create a next-level 'digital twin' infused with site information. Monthly updates were delivered to Sensat's cloud-based Common Visualisation Environment (CVE)<sup>®</sup> enabling Octavius to track site progress remotely, improve site safety and better collaborate across the project.

In collaboration with:

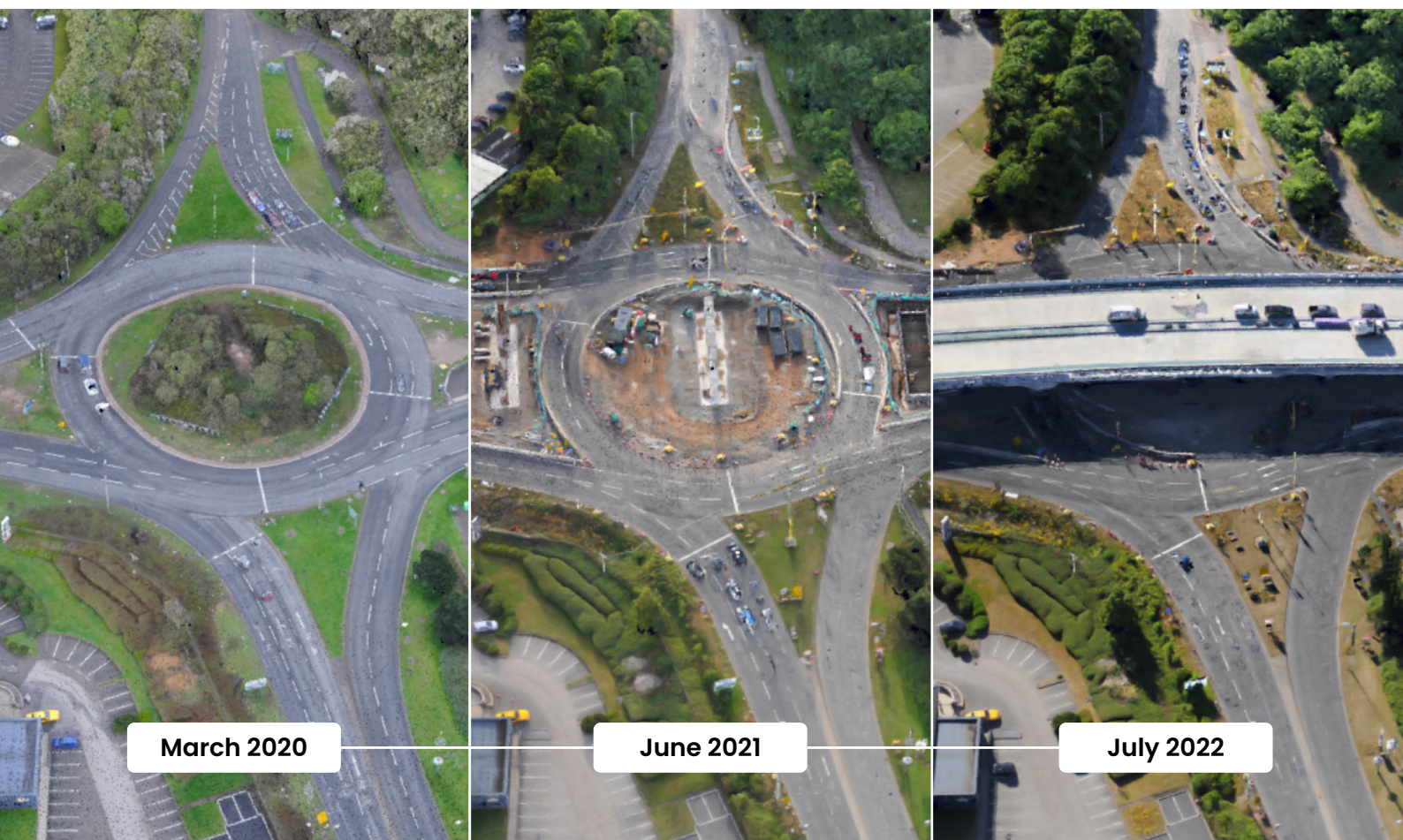


Above highly accurate digital twin of the A46 project displayed within Sensat's platform



# The project

In March 2020, the Octavius team began building the new A46 flyover over the Binley junction near Coventry. The highways improvement project aimed to separate local traffic from using the A46 to minimise traffic queues at the roundabout and improve journey times. As a critical junction, the Octavius team needed to keep traffic flowing through the area during the project. However, this also subjected teams to the risk of live highways which needed strict health and safety management.



Above Sensat's timeline feature used for remote progress monitoring

From the get-go Octavius partnered with Sensat, leaning into Sensat's enhanced data capture and visualisation technology, to help deliver the programme. Over 18 months, Sensat fed remotely captured data to create a state-of-the-art 2D and 3D digital twin of the site. This helped the interdisciplinary project teams to visualise the intricate site and its changes throughout the construction stage.

# Overcoming project challenges

## Remote progress monitoring

In order to keep the £61million project on schedule, Octavius required accurate and up-to-date insights for progress monitoring and decision making.

Octavius utilised Sensat to compliment the data they already had using monthly site updates. Sensat delivered this data without the need to implement traffic management systems, road closures or put boots on the ground.

The data was visualised on Sensat as an accurate 'digital twin' of the site for remote progress monitoring. These monthly updates allowed Octavius to quickly flick between the past, present and future plans for the site, to help align progress against the schedule of works.

Octavius was able to minimise night carriageway closures by 18 shifts—significantly reducing the health and safety risk associated with installing, working within and removing the traffic management. In turn, this also reduced disruption to the public, helping to contribute to the project's high customer satisfaction results.



During the construction stage of the A46 Binley project Sensat has added significant value. It has aided our clash detection and planning for both temporary works and traffic management. The availability of the data to all members of the integrated project team through the platform has reduced site visits and increased the efficiency of issue resolution.



**Jarrold Parkin**  
Schemes Delivery Lead,  
Octavius Infrastructure Limited

## Collaboration in one platform

The success of this project was dependent on the collaboration between a multitude of different teams and disciplines expertise; this included traffic management, designers and subcontractors. Without a collaboration tool in place, teams would have had to go through multiple contractors, documents, drawings, plans and other siloed data to obtain the insights needed for decision making.

Sensat created a detailed digital site replica of the Binley junction, accessible from anywhere by those who needed it. This opened up information access and helped minimise unnecessary back and forth between emails, calls and meetings. Meanwhile, the Project Management Office was able to view the asset in its entirety and make informed

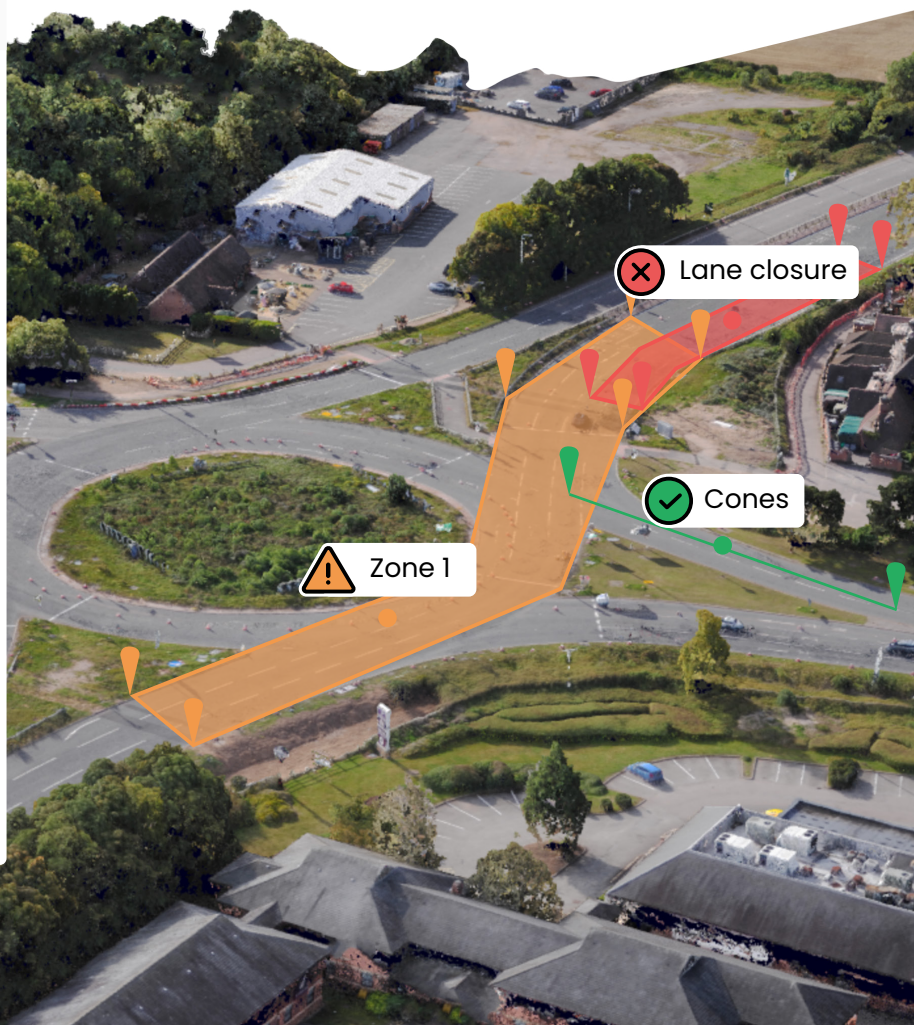
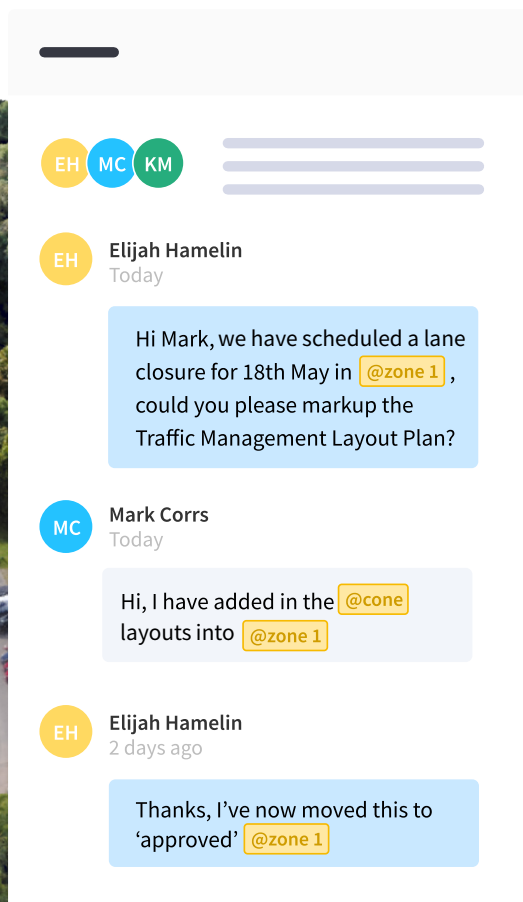


### Overcoming project challenges

decisions from a holistic view. Using Sensat, the project maintained one visual and intuitive single source of truth to ensure over 10 teams worked together seamlessly.

### Next-level stakeholder communication

Octavius was required to communicate monthly progress updates to National Highways. Usually, this is a time-consuming task; collating photographs of the site, reporting on-site data insights, and undertaking an analysis of progress against the project programme. However, thanks to unlimited user access, Sensat was used across different teams and organisations, including National Highways, so that monthly updates could be centred around the up-to-date digital twin. National Highways, was able to quickly see exactly what was happening without the need for lengthy meetings, blurry photos or site walkthroughs. And, any questions asked between the monthly updates were clarified in the context of the site using Sensat’s commenting feature, making back and forth conversations smoother.



### Overcoming project challenges

The digital twin platform was also used as a centre of focus for meetings. Teams could quickly pull up the platform and navigate around the 3D digital twin site to enable everyone to understand exactly what was being spoken about. Additionally, by seeing technical designs against the backdrop of the real world it meant that no technical knowledge or jargon was required to understand the complexities of the project.

### Viewing designs in context

At the start of the project, the Octavius team could not easily cross-reference designs with the real-world environment.

Below Sensat's schedule integration pulling in information from Primavera P6 into Sensat, helping to break down silos across teams



# 18 shifts

Octavius was able to minimise night carriageway closures helping to significantly reduce health and safety risk.

This would have left the project vulnerable to risks such as clashes with the existing environment. If such risks involved were not identified, and controlled well in time, it would have lead to huge time and cost overrun. Furthermore, the ever-changing project site made it difficult to plan work proposals without manually having to go to the site for inspection.



## Overcoming project challenges

Using the digital site replica of the site (visualised in 2D and 3D) the teams were able to align designs with the environment ensuring that everything ran smoothly. This

also allowed issues to be foreseen well ahead of time so that they could be resolved before becoming costly. Operating plans over the backdrop of the real world helped all teams to have a more holistic understanding of the project, supporting better decision-making.



### Improving site safety: accessing the site remotely

Octavius has always centred safety as the most important aspect of a project. In recognition that every construction site poses a significant safety risk, the team wanted to find solutions to improve site safety. One

way they achieved this was through increased reliance on the digital environment. Instead of sending people back and forth between the office and live site, teams consulted their digital site replica first. Without the digital twin, in-context conversations would only otherwise be possible on site.

Using Sensat, Octavius has been able to reduce the frequency of site visits by making site information available from anywhere. Sensat brings together all of the project data so that it can be quickly interrogated to make decisions. This helped to increase the understanding of the site without having to put boots on the ground.

### Taking measurements from anywhere

Traditionally to get accurate site measurements, people would need to be sent to site which is time consuming

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Whereas before, minor changes to the design could mean several weeks or months of backward and forward communications between architects, engineers and owners across several platforms, tools and systems, insights into the effects of changes can now be visible to all the necessary stakeholders almost instantaneously.

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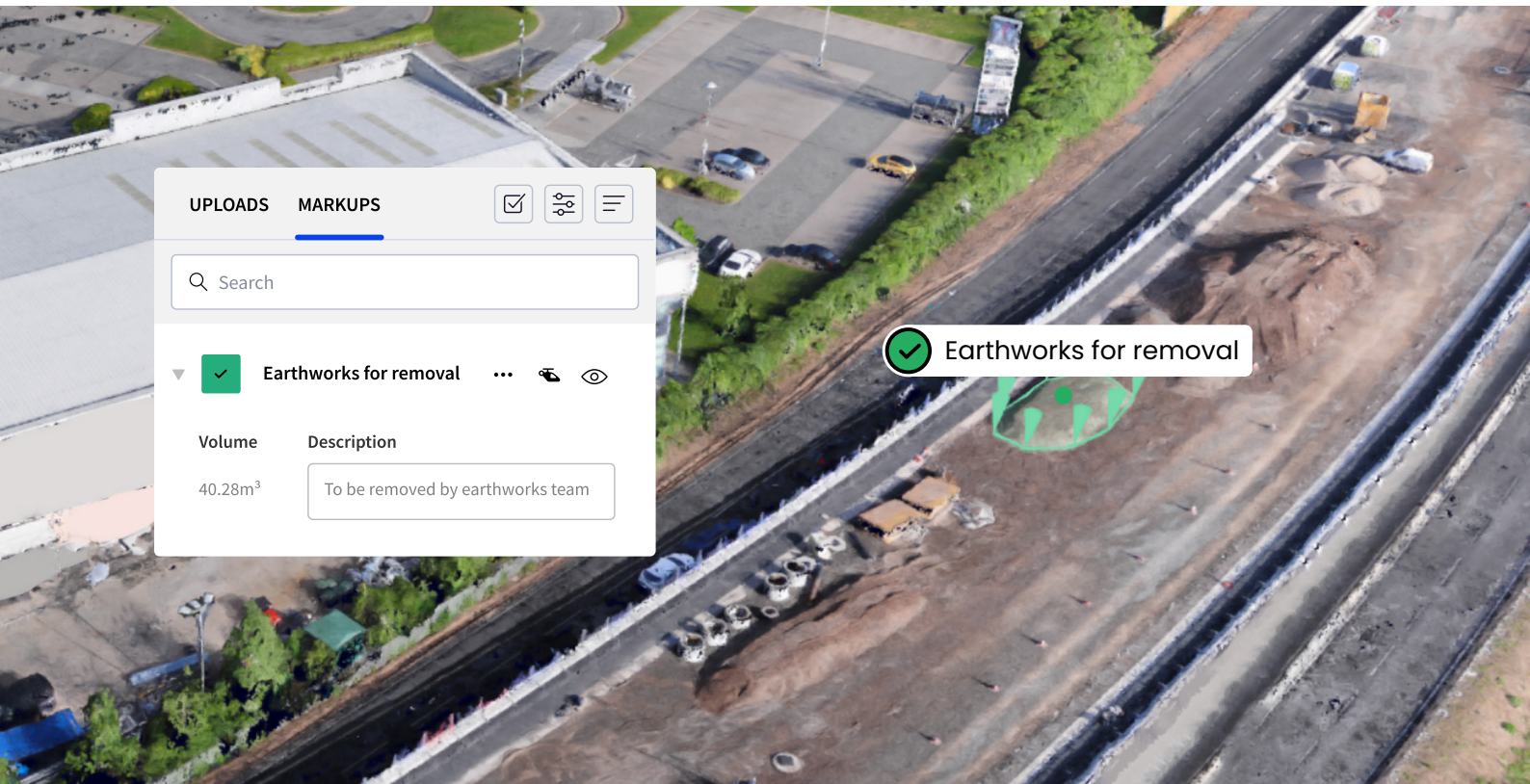
James Dean,  
Sensat Founder and CEO

### Overcoming project challenges

# 7.4 tonnes

of CO2 were saved as a result of reduced site visits.

and can be dangerous. Using Sensat, within a few clicks, important information could be obtained on a self-serve basis. For example, Traffic Management and Temporary Works teams used Sensat’s measurement tools to accurately plan cone layouts and traffic systems—minimising the time spent on site. And, when teams did have to go to site, they knew exactly what needed to be done through advanced and accurate planning. To date, the team have made over 800 markups and saved 7.4 tonnes of CO2 as a result of reduced site visits and improved traffic management planning.



Above Sensat’s in-platform volumetric measurement tool used to measure stockpiles on site.

### Unlocking insights from project information

Octavius utilised several programmes, such as geographic information system (GIS), which required a technical user to maintain and administer the platform. This created a decision-making bottleneck as not all team members had the required access or training to acquire the insights needed.



## Overcoming project challenges



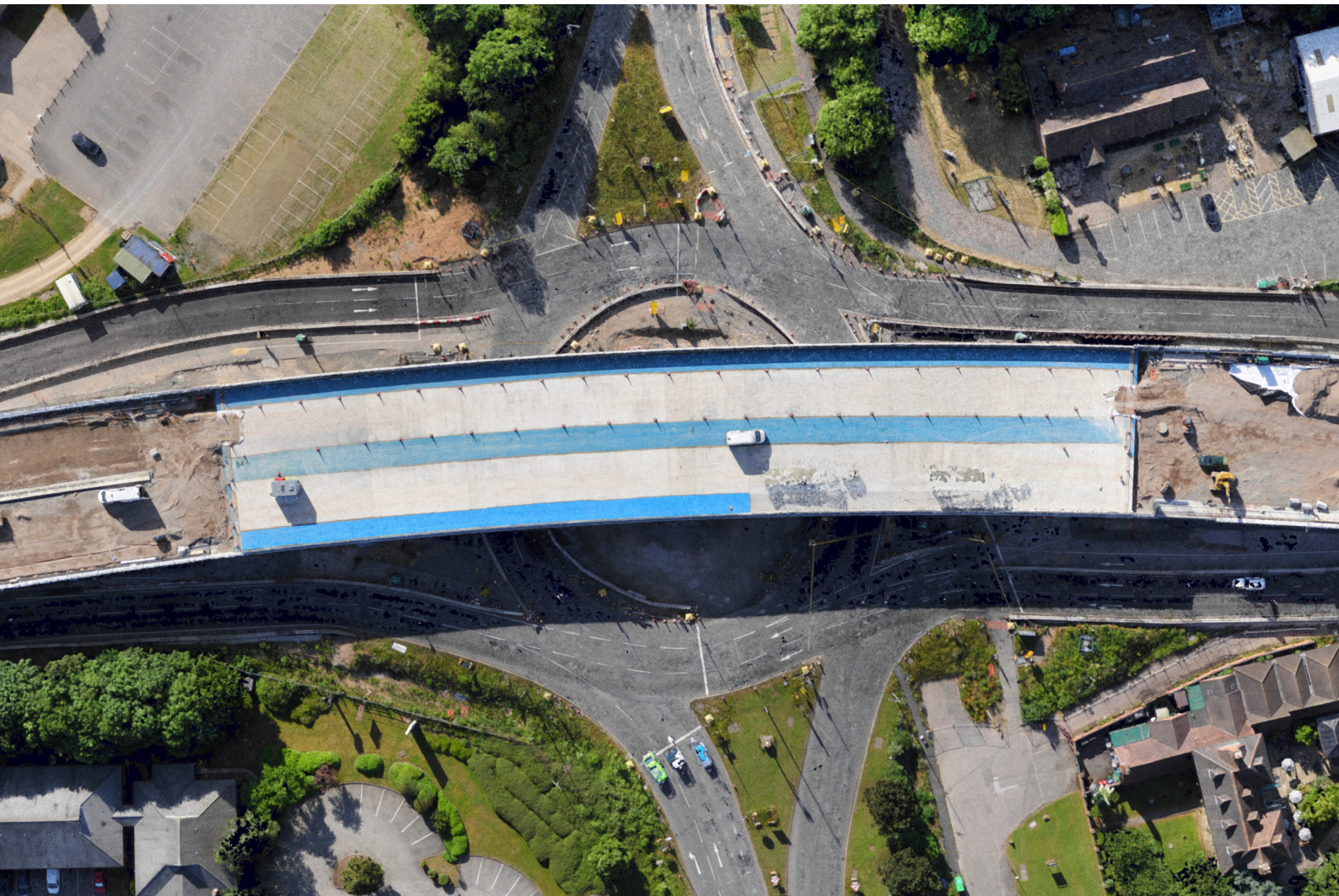
Sensat is a real game-changer. It has aided our visual clash detection and planning, significantly reducing the time taken in the process. It has also made tying our survey and design data together a breeze.



**Ian Holden**  
Head of Construction,  
Octavius Infrastructure Limited

Sensat was able to unlock the value in the data they already had including flood maps and bridge designs in 2D and 3D. With the platform's advanced data layering capability the digital representation of the Binley junction was infused with information from a variety of disciplines such as GIS data. Visualising the information meant that even those who weren't technically trained were able to make quick judgments based on up-to-date, accurate, and consumable data.

Sensat's CVE acted as the single source of truth for the A46 project that everyone was able to work from. Project members were able to simply upload datasets on a self-serve basis into the platform which could instantly be viewed and explored within the context of the real world and against other designs.





# Conclusion

Over the past two years the resulting digital twin provided Octavius Infrastructure with the visibility and insight needed to accurately monitor progress from anywhere.

This minimised time spent on site, informed data-driven decisions, and helped teams spot risks early.

## Summary table

Problem	→ Solution
The team needed a fast and accurate way to track progress remotely.	Progress updates were assessed remotely via Sensat with monthly updates captured remotely in just 2 hours.
Enhancing stakeholder collaboration.	With unlimited user access to the Sensat platform, multiple teams have been able to access a digital site replica of the Binley junction, upload data and access others information to make better, data-driven decisions.
Octavius had no way to visualise data in the context of the real world.	Sensat’s Common Visualisation Environment provided an up-to-date backdrop that technical design and project data could be overlaid over for a more holistic understanding.
Data sets were siloed by team or system.	Using Sensat teams unlocked insights from project data the team already possessed.
Octavius wanted to make the project more sustainable	Octavius was able to save 7.4 tonnes of CO2 as a result of fewer trips to site and relying on the digital twin.