Green Solutions:

Digital 3D survey data

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Telent Green Solutions Working Group

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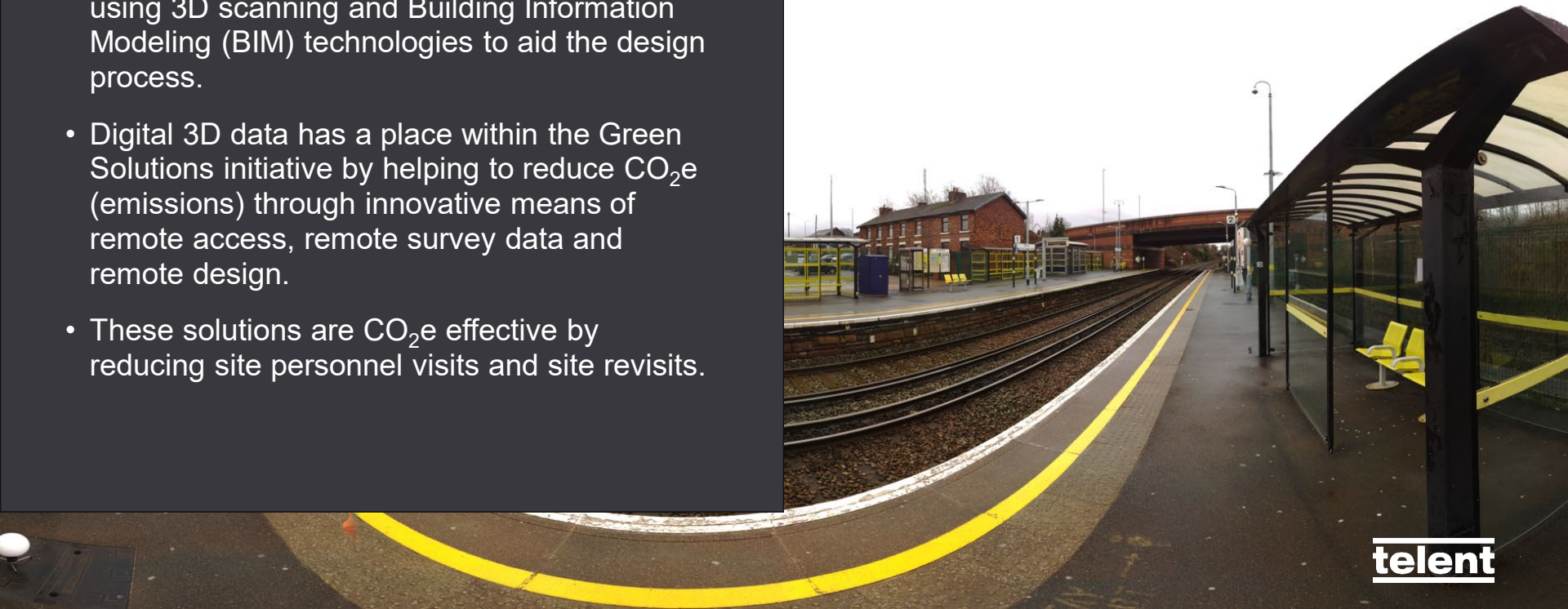
Green Solutions: 3D survey data

- Our mission is to support and enhance the design phases of engineering projects by using 3D scanning and Building Information Modeling (BIM) technologies to aid the design process.
- Digital 3D data has a place within the Green Solutions initiative by helping to reduce CO_2e (emissions) through innovative means of remote access, remote survey data and remote design.
- These solutions are CO_2e effective by reducing site personnel visits and site revisits.



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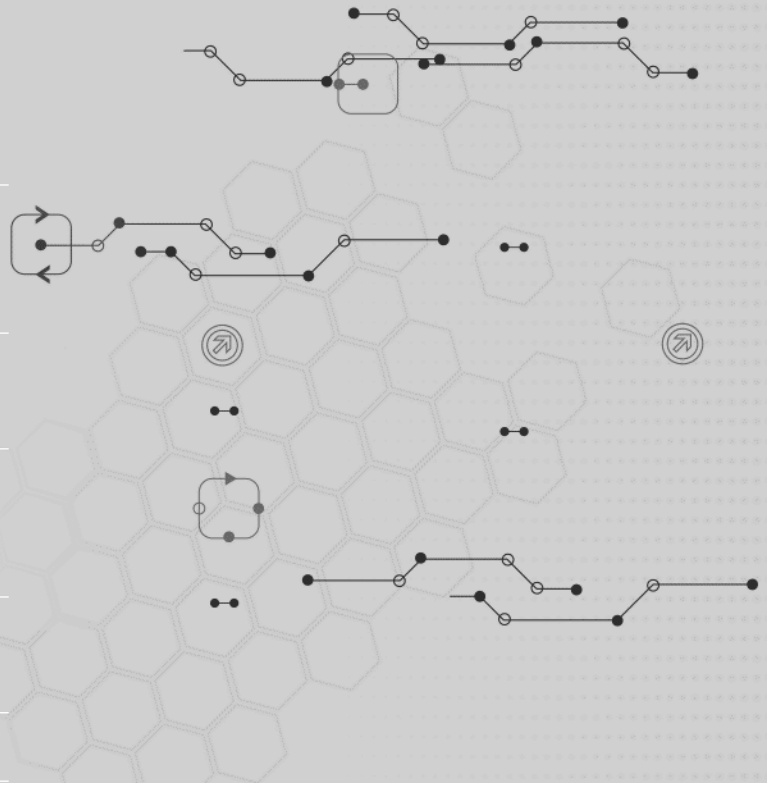
Green Solutions: 3D survey data

The digital design team has the ability to capture a 3D data set known as a point cloud. This data can be manipulated within different 3D design software to produce a variety of engineering applications.

Asset tagging	Remote desktop asset identification and mapping can be scaled to any size, identifying whole buildings, rooms, or even sub-sections of equipment. All the information can be linked with ACCUMEN.
CCTV /DOO(P)	Sensory equipment such as CCTV cameras, or DOO (Driver-Only-Operated) systems can have their placements, blind spots and FOVs simulated.
Equipment Simulation	Accurate insertion and simulation of assets and objects. This is key to simulate clearances and other design requirements. Remote measurements available through the remote online platform.
Layouts	Scan data can be used for automatically generated top-down views and for the creation of accurate to-scale overview maps.

This remote data can be visualised using the partner software "Faro Sphere"



Green Solutions: Our Vision

Telent have committed to achieving net-zero GHG emissions by 2050 through the Science Based Targets initiative (SBTi)

This includes emissions created indirectly by our entire value chain, from raw material extraction to customer use of our products and services - providing sustainable whole-life solutions to our customers

In 2023, we set a near-term target to reduce all emissions by an average of **50%**, no later than 2030

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SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

THE NET ZERO STANDARD
APPROVED NET-ZERO TARGETS

SILVER 2022 ecovadis Sustainability Rating

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Green Solutions: Survey approaches

We set out to devise a more sustainable survey solution

Working with our design and surveying teams, we developed a renewable hybrid approach for low environmental impact and operating costs, with maximum reliability.

Design survey

Initial design survey based on project requirements

3D Survey

3D survey performed to capture construction information to reduce site revisits

Green Solutions: Environmental benefits

Utilisation of digitally produced 3D survey data as a supporting tool offers a range of sustainable benefits:

Reduced costs, time and CO_2e emissions

Efficient, accurate digital mapping and analysis, minimises the need for physical site visits.

Efficient resource utilisation

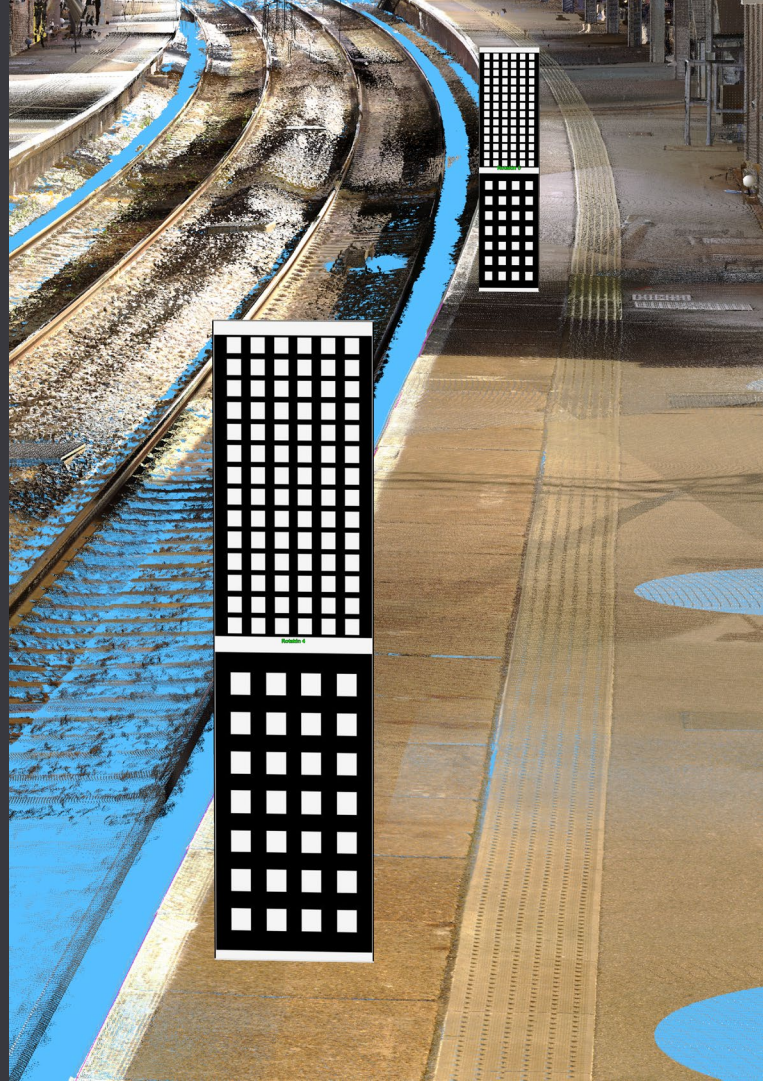
Reduce the need for excess materials and labour, through accurate planning and execution.

Reduce the need for frequent on-site visits, and minimizing exposure to potential hazards

Remote site walkthrough.

Enhanced recycling processes and reduction of material waste

Creation of accurate BOM's, with better inventory tracking.



Green Solutions: Environmental benefits

Utilisation of digitally produced 3D survey data as a supporting tool offers a range of sustainable benefits:

Enhanced design and prototyping

Equipment simulation within the 3D point cloud environment.

Improved product lifecycle management

Enables better project tracking, analysis and optimisation of existing processes.

Energy savings

Enables better optimisation of building designs and systems, reducing energy consumptions.

Heritage preservation

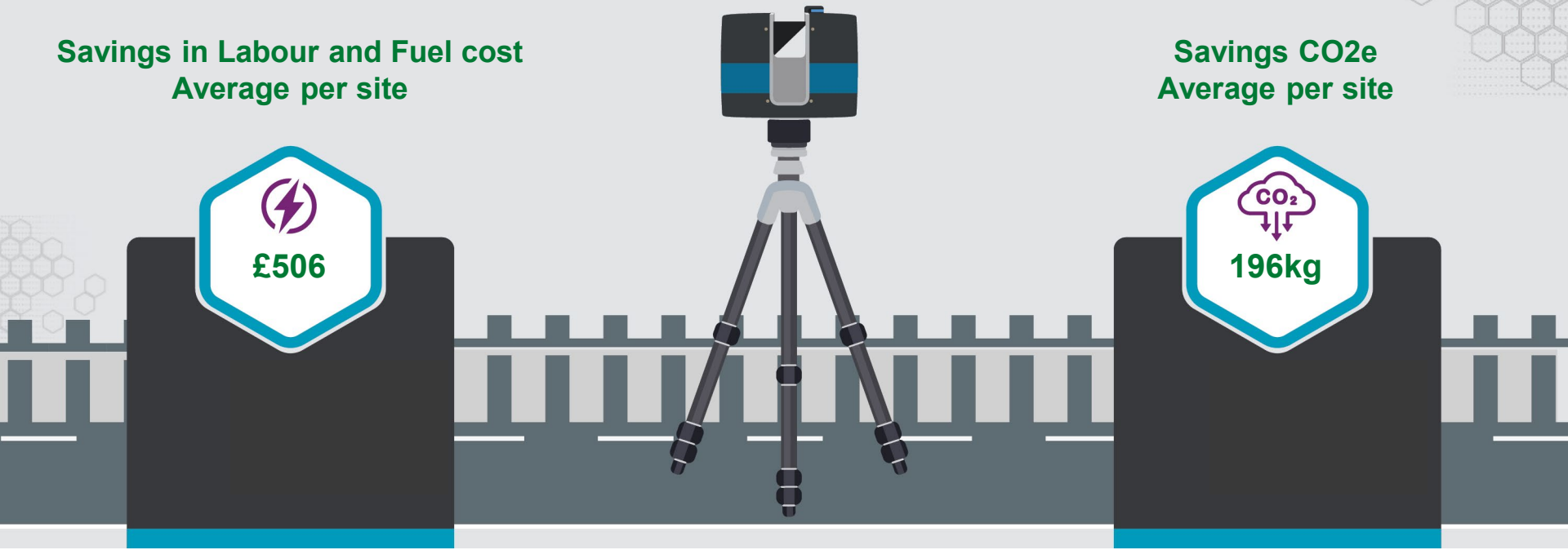
Creation of accurate digital records of historical sites that can be utilised within the design phase.

Green Solutions: Average CISS rail site savings - 3D survey

Average for a typical CISS upgrade site cost and CO2e savings *

Savings in Labour and Fuel cost
Average per site

£506



Savings CO2e
Average per site

196kg

* These numbers are derived from a data analysis that has been produced from the Wessex CISS & PA renewal project.

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Green Solutions: Analysis on 200 sites

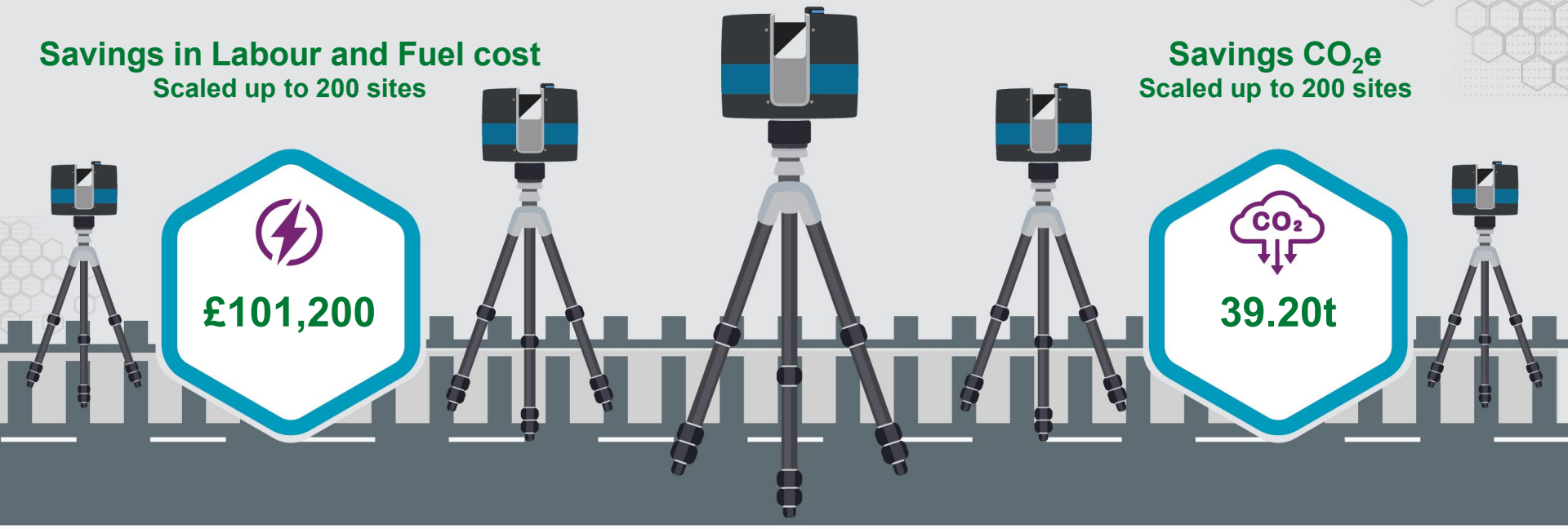
Utilisation of Digital 3D survey data - scaled up to 200 sites

Savings in Labour and Fuel cost
Scaled up to 200 sites

£101,200

Savings CO_2e
Scaled up to 200 sites

39.20t



* These numbers are derived from a data analysis that has been produced from the Wessex CISS & PA renewal project.

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Green Solutions: Data & Technical Specifications

ASSUMPTIONS

- The 3D digital information has been captured during the survey stage, processed and made available through the Faro Sphere online platform.
- All the calculations have been produced based on the utilisation of a surveyor and a COSS.
- All the extra surveys have been calculating using the following logic :
    - An individual analysis for every site has been produced by observing the total site re-views from Faro Sphere.
    - For every 30 project views ,1 survey has been recommended. If the division of each sites review from Faro Sphere has a remainder bigger than 15 an extra site revisit will be taken into account.
    - The total number of miles recorded per trip has the starting point at Telent's office in Warwick Point 3 and terminates at the surveyed train station.
    - To accurately calculate the cost of fuel, labour and CO2e (emissions), the return from site to Telent's office has been taken into account.
    - The time recorded for producing a survey, including the travelling time has been assigned to 5hrs.
    - The COSS and Surveyor hourly rate have been individually calculated
    - Average fuel consumption utilised for the calculation of fuel required to complete the journey was 40mpg and the fuel cost was identified at £1.50 (29th of May).
- Based on the (UK Government GHG Conversion Factor for Company Reporting 2023 Condensed Set Version 1.1) in order to precisely calculate the CO2e produced by a Skoda Octavia Estate diesel company vehicle, the following procedure has been adopted :
- Every Km of the journey must be converted to kWh. (1 Km= 0.82514kWh)
- Every kWh must be converted to KgCO2e. (1 kWh = 0.25 KgCO2e).

Numbers derived from WESSEX CIS AND PA upgrade project.

Cost and CO2e savings:

- 218 sites, 7385 total views registered on Faro Sphere as of 28th of May 24. Based on these numbers and the assumptions made within this slide, the following results have been obtained :
- The number of extra site revisits that would have been required was 242, with 179 different site locations.
- As each individual site that would have required a survey has been identified, the round trip distance have been calculated at 170,170.10 Km / 105,738.8 miles.
- In order to visit all the sites, a COSS and a surveyor will have to be employed for a duration of 5 hours per site revisit. The labour cost will result from :
    - Total number of site revisits * (allocated survey time + travelling time) * hourly rate of all employed people for the survey
    - 242 site revisits * 5hrs * rate
- Utilising the 40mpg / 7.1l/100Km (fuel average) the total amount of fuel needed to travel the whole distance would be 12,082.07 litres of diesel.
- Taking into account that the cost of 1litre of diesel = £1.50 , the total fuel cost would be £18,123.12.
- Following the government procedure, Wessex has benefited of the following CO2e savings:
- 170,170.10 Km *0.82514 = 140,414.156 kWh.
- 140,414.156 kWh * 0.25 = 35,103.53 KgCO2e.
- Following this study case, Telent has managed to average a reduction in cost per site of £506 and 196KgCO2e.

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