ECO OPERATOR

CASE STUDY

SKANSKA COSTAIN STRABAG

LYNCH

INTRODUCTION

Lynch's key objective when it comes to our Carbon Reduction Plan is to educate, collaborate, promote data transparency, and increase on-site productivity for our customers and all other stakeholders involved. As set out in our Sustainability Strategy, this is in line with our plan to achieve **Net Zero Carbon by 2040 (Scopes 1 & 2) - Scope 3 by 2050, in line with government targets**. Our main aim is to increase awareness in and out of our boardrooms and to act responsibly during the process.

We must look beyond the traditional bottom line and expand our thinking to encompass the 4 P's: **People, Planet, Philanthropy** and **Profit**. We are committed to shift our focus and take our economic, social, and environmental responsibilities into account.

OUR COMMITMENT

Over the years, Lynch has expanded our thinking in many areas. As a Plant Hire company with purchasing power, we recognise our role to drive sustainable solutions within our industry. Even when procuring machines, we bring sustainability to the table by using our own historic data as one of the deciding factors to purchase equipment. In addition, we have also launched a sustainability educational plan, aligned to the Supply Chain Sustainability School where we educate our staff on the topic.

Our commitment has led us to be the very first plant hire company in the UK to earn a Gold CSR badge from Corporate Social Responsibility Association.

The benefits of CSR embedded into our business strategy are:

- Internal staff engagement, health and well-being
- Collaboration with our customers and suppliers in their sustainable objectives and targets (such as Zero Carbon)
- Support for local and national charities and community engagement
- Cost savings through efficiencies
- Driving innovation
- Energy Performance

THE WHY

Our sector has increasingly become more aware of our impact on the environment. The UK Government's plans to reach Net Zero by 2050 has encouraged us all to be LEAN. However, the sector relies on heavy machinery, with a limited availability of hybrid, electric and/or hydrogen powered alternatives. Also, not all infrastructure sites currently have enough electricity supplied to maintain the operation of hybrid and electric machines during their hire period. Furthermore, the technological abilities that the machines possess as of current, need hours of charging, whereas machines ran by fossil fuels simply need a top-up which is far less time consuming.

Several of our customers are exploring how to reduce their carbon footprint while maintaining site productivity.

But what does it mean to '**be green**'?

Besides **installing solar panels, automatic LED lights** and **banning single plastic use in the office**, are we using two of our major resources to make a larger carbon reduction impact on-site?

CUSTOMER CHALLENGE

We are some years away from being able to use only electric or hydrogen machines on-site, and so we have to find a solution in the meantime to solve the problem at hand. Therefore, we must focus on what we do have, namely our people and data.

We live in the era of technology, innovation, and information. However, the quality of the information is far more important than the quantity of information. Also, knowing what to do with data and **how** to interpret the results seems to be one of our biggest challenges.

Data is a set of results that technically speaking cannot be manipulated. However, as a plant hire company, we can help our customers reduce the total idling by providing the **readily available data** that we get from our OEM's telematics platforms. We have been championing customer - supplier data transparency **since 2016**. In addition to the latter, we also contribute to our customer's site productivity by investing in toolbox talks and other training for our plant operators. This is one of the main reasons why we started our **Eco Operator Training Programme in 2019**.

In this report we will highlight how we have improved our programme three years after its inception. It has not only raised awareness towards our drivers' own Carbon Footprint, but it has also sparked a friendly competition between our focus group. Lastly, our data analytics team has designed and trialled an Individual Carbon Reduction/ Budget Plan for each operator on-site to see if data visualisation drives behavioural change on-site.

CARBON EXERCISE ON SCS HS2

Learning Points: Sustainability, Forcasting & Visualisation

Duration: 3-Month Period

Sample Size: 16 Drivers

Machine Type: Excavator, Telehandler, Roller, Dozer, Dumptruck

Goals:

Reduce: Idling, Fuel Consumption, CO^2 Emissions

Improve: Operator Health

Educate: Drivers on their Carbon footprint / environmental impact

Promote: Data transparency by providing data to the customer, helping them reach net zero quicker

Process: How did we do it?

Toolbox Talks 1: Our Eco Operator Training Team went on-site to give our Operators their first briefing in the first week of Month 1.

Data Collection: Our Data Analytics team collected the data in Month-1 to set a starting point/benchmark for each operator.

Data Feedback: Our training team went back onsite at the end of Month-1 to present the data to each driver.

Toolbox Talk 2: Our Eco Operator team held their second toolbox talks in the first week of month 2.

Data Collection: Our Data analytics team continued to gather data but introduced Monthly Idling Pie charts in addition to the table of numbers to see if data visualisation leads to better data understanding / interpretation.

Toolbox Talk 3: Our Eco Operator team held their third and final toolbox talks in the first week of month 3.

Forecasting: Our Data Analytics team introduced an individual Carbon Reduction Plan for each driver.

THE RESULTS

The overall goal of the exercise was to move the driver idling percentage from **red, to yellow,** to **green**.

>60% EDUCATE MONITOR

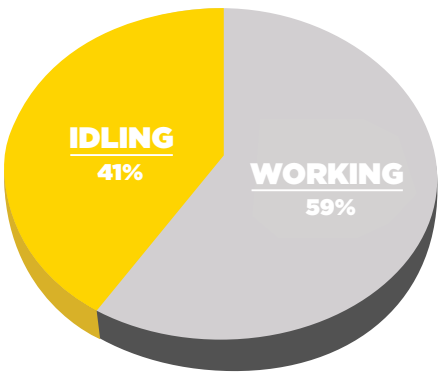
41%-59% IMPROVE

>40% MAINTAIN

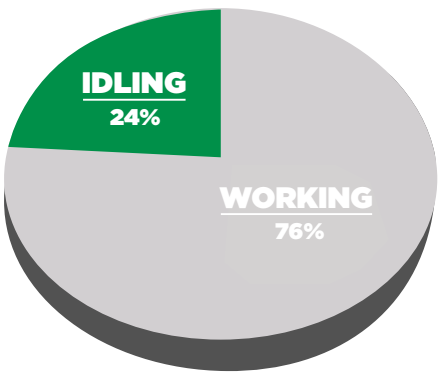
Focus Group Totals: Savings

The total average idling percentage for the focus group at the start of this exercise was **41%**, by end of Month 3 it dropped to **24%**

Month 1



Month 3



Based on a side-by-side comparison from Month 1 vs. Month 3, the 16 drivers totals shows that there is an increase in working time, which means that the site productivity increased by 582 hours.
Also, there is a reduction in Total Idling hours which led to the average CO^2 consumption per day to drop by 46%.

	MONTH 1	MONTH 3
TOTAL ENGINE ON	2,487	2,691
TOTAL IDLE TIME	1,026	647
TOTAL WORKING TIME	1,461	2043
IDLE VS ENGINE ON	41%	24%
TOTAL FUEL BURN (l)	17,124.6	7,944.9
TOTAL CO^2 (kg)	44,423	20,610
TOTAL WORKING DAYS	27	27
AVERAGE CO^2 PER DAY	1,645.3	763.3

THE RESULTS

A reduction in idling leads to a substantial fuel cost saving for the customer in the long run. In this example, the total fuel consumption was 17124.6 litres in month 1 and dropped to **7944.9l** in month 3. Based on the current fuel price of £1.15, this would amount to a total cost saving of **£10556.66** over the course of three months.

That could potentially mean a savings of £40K per year for just these 16 machines.

If this programme is rolled out throughout the project, this could amount to a vast fuel cost saving for the customer.

	MONTH 1	MONTH 3
TOTAL FUEL CONSUMPTION (l)	1,026	647
TOTAL FUEL CONSUMPTION (£)	1,461	2043
SAVINGS IN £	£10,556.66	
PROJECTED FUEL SAVED PER YEAR	£42,226.62	

Idling Percentages per Machine Type: Improvements

We also looked at the main focus points based on machine types. We found that extra training should be invested in our Excavators above 10-ton as they account for 81% of the idling.

Challenges Encountered

Some third-party machines do not have fuel information, especially those under 9-ton. So, in order to have a full site data overview of the CO2 emissions, all machines need to report fuel in the future.

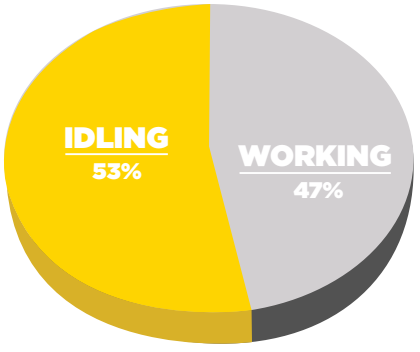
We should consider introducing different idling classifications for each machine type as their machine activity depends on the task at hand.

INDIVIDUAL DRIVERS

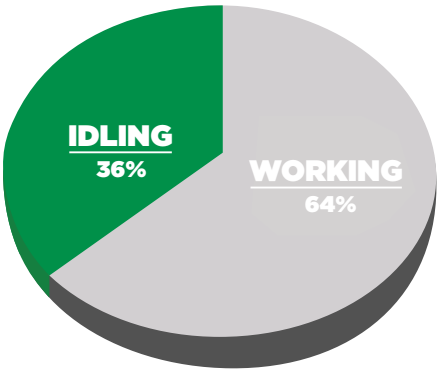
Overview:

One of the main focuses of this exercise was to improve our driver behaviour by **educating our drivers individually**.

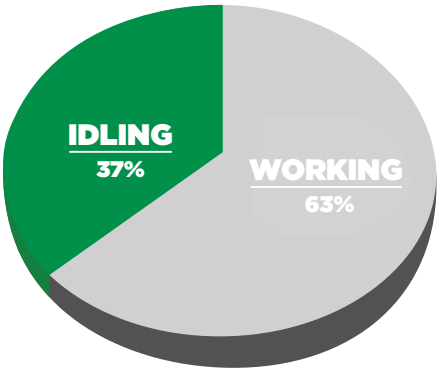
Driver 1:



Month 1



Month 2



Month 3

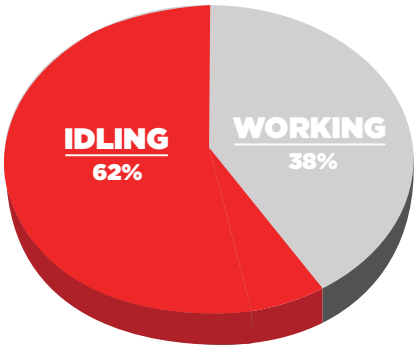
The results show that Driver 1 went from yellow to green after one month of training and later on maintained at green in the following month.

INDIVIDUAL DRIVERS

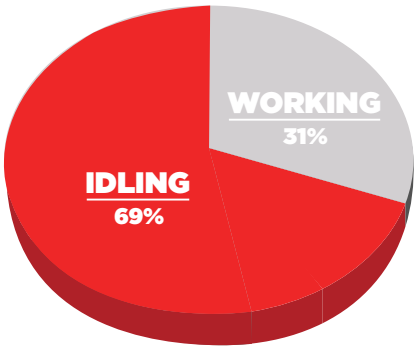
Overview:

One of the main focuses of this exercise was to improve our driver behaviour by **educating our drivers individually**.

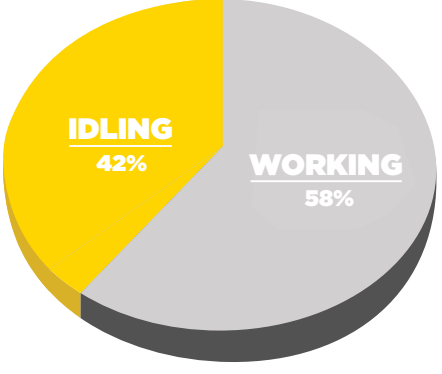
Driver 2:



Month 1



Month 2



Month 3

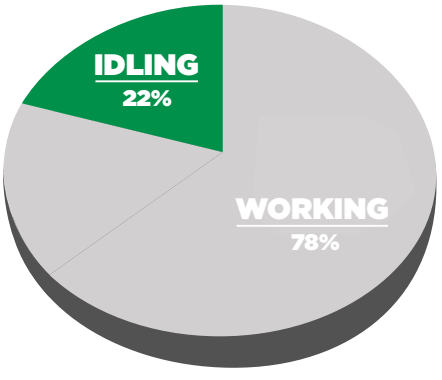
Driver 2 consistently had high idling despite him driving a similar machine to Driver 1. **However, his idling improved in month 3.**

INDIVIDUAL DRIVERS

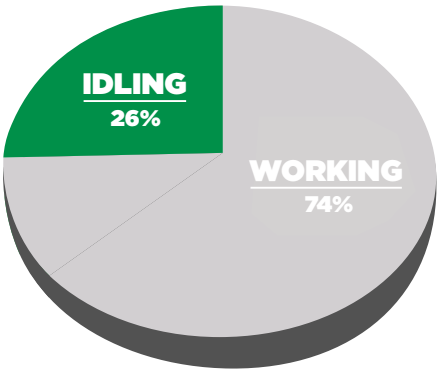
Overview:

One of the main focuses of this exercise was to improve our driver behaviour by **educating our drivers individually**.

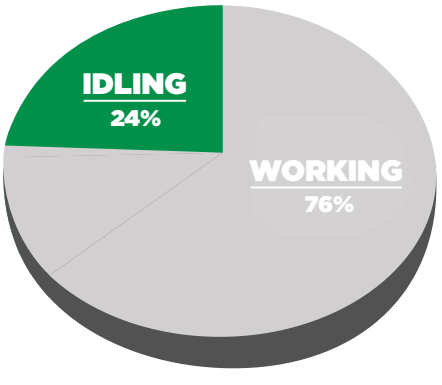
Driver 3:



Month 1



Month 2



Month 3

Driver 3 had consistent green idling since **month 1**.

INDIVIDUAL DRIVERS

Driver 3 continued:

A closer look at the data for driver 3 showed us that although he was already green, the CO2 consumption has improved over the course of 3 months.

	MONTH 1	MONTH 2	MONTH 3
TOTAL ENGINE ON	163.2	125.28	126.3
TOTAL IDLE TIME	58	47.7	47.6
TOTAL WORKING TIME	105.2	77.58	78.7
IDLE VS ENGINE ON	36%	38%	38%
TOTAL FUEL BURN (L)	1,862.0	1,230	1,329.3
TOTAL CO^2 (KG)	4,830	3,191	3,448
TOTAL WORKING DAYS	25	19	23
AVERAGE CO2 PER DAY	193.2	167.9	149.9

GREEN LEADERSHIP BOARD

All in all, the data shows that total idling depends on machine type, for example, if a driver is driving a dumper, high idling percentages are expected. The question we would have to ask ourselves is, what is considered 'healthy idling' based on the machine type and/or task at hand i.e: lifting.

To stimulate the drivers, we have designed a **Green Leadership Board** based on the CO2 improvement per driver and per machine type.

One of our lead Eco Operator Trainers, Valon Krivenjeva comments:

'The leadership board actually serves as motivation for the drivers. They are excited to see their improvement month by month. It has become a bit of a friendly competition between themselves to reach the top of the board but it also serves as an internal competition for the individual to be better than the month before. In the process of doing so, we are also educating them. It's a win-win situation.'

GREEN LEADERSHIP BOARD

See below snapshots of the **Green Leadership Board**.

GREEN LEADERSHIP BOARD - CO2 EMISSIONS

Operator Name	Machine Type (most common operated by driver)	Average /Benchmark	Month 1	Month 2	Month 3
Operator 1	Telehandler	64.61	72.43	61.61	59.79
Operator 2	Telehandler	66.54	57.44	65.71	76.47
Operator 3	Telehandler	68.31	67.33	69.13	68.46
Operator 4	Roller	73.23	88.75	82.62	48.31
Operator 5	BACKHOE LOADER	96.2	101.45	98.48	88.68
Operator 6	Dozer	96.95	81.22	107.12	102.51
Operator 7	Excavator	103.28	108.36	102.24	99.22
Operator 8	Dozer	104.54	194.23	72.32	47.07
Operator 9	Excavator	122.56	125.66	125.30	116.73
Operator 10	Excavator	170.36	193.21	167.93	149.93
Operator 11	Dozer	190.46	222.95	157.97	
Operator 12	Excavators	210.47	259.64	184.99	186.78
Operator 13	Excavator	255.31	360.69	149.94	
Operator 14	Dumptruck	96.55	59.56	44.10	186.00
Operator 15	Dumptruck	61.04	60.39	54.76	67.97
Operator 16	Dumptruck	70.70	75.82	61.85	74.44

GREENEST DRIVER - EXCAVATOR

Operator Name	Machine Type (most common operated by driver)	Average /Benchmark	Month 1	Month 2	Month 3
Operator 7 - 2	Excavator	103.28	108.36	102.24	99.22
Operator 12 - 2	Excavator	122.56	125.66	125.30	116.73
Operator 10 - 2	Excavator	170.36	193.21	167.93	149.93
Operatoe 12 - 2	Excavators	210.47	259.64	184.99	186.78
Operator 13 - 2	Excavator	255.31	360.69	149.94	

GREENEST DRIVER - TELEHANDLER

Operator Name	Machine Type (most common operated by driver)	Average /Benchmark	Month 1	Month 2	Month 3
Operator 1 - 2	Telehandler	64.61	72.43	61.61	59.79
Operator 2 - 2	Telehandler	66.54	57.44	65.71	76.47
Operator 3 - 2	Telehandler	68.31	67.33	69.13	68.46

GREENEST DRIVER - DOZER

Operator Name	Machine Type (most common operated by driver)	Average /Benchmark	Month 1	Month 2	Month 3
Operator 6 - 2	Dozer	96.95	81.22	107.12	102.51
Operator 8 - 2	Dozer	104.54	194.23	72.32	47.07
Operator 11 - 2	Dozer	190.46	222.95	157.97	

Operator Name	Machine Type (most common operated by driver)	Average /Benchmark	Month 1	Month 2	Month 3
Operator 15 - 2	Dumptruck	61.04	60.39	54.76	67.97
Operator 16 - 2	Dumptruck	70.7	75.82	61.85	74.44
Operator 14 - 2	Dumptruck	96.55	59.56	44.10	186.00

GOING FORWARD

Forecasting:

Forecasting allows us to establish trends which can be used to project the future, based on historical data and assumptions. This method can be used to make an educated guess on how to anticipate fuel expenses, CO^2 consumption and so on.

It is important to mention that forecasting does not give you a definitive way to proceed with a decision. It shows you the probabilities and what might be a proper course of action to take in order to achieve a certain outcome.

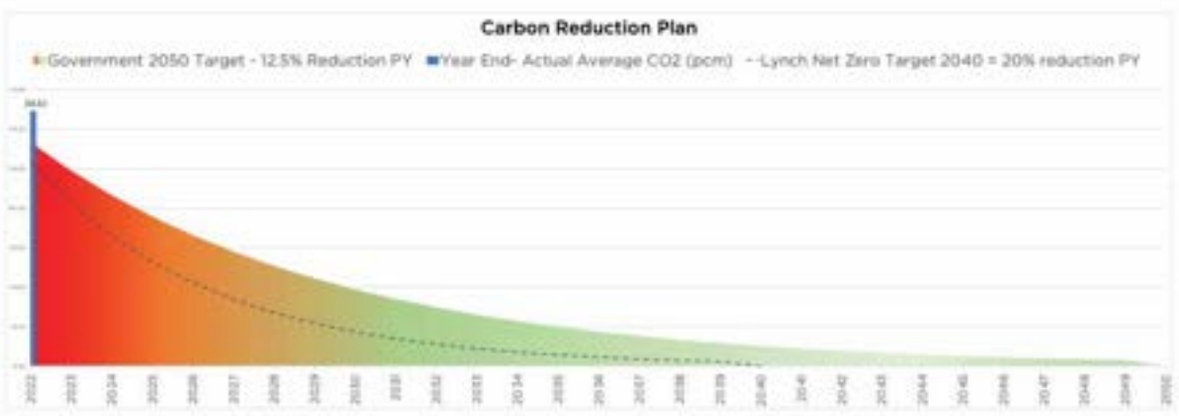
For Lynch, our ultimate goal is to have a year-on-year data overview for each driver so they can see their progress with the aim to reach **Net Zero Carbon by 2040 (Scopes 1 & 2) - Scope 3 by 2050, in line with government targets**.

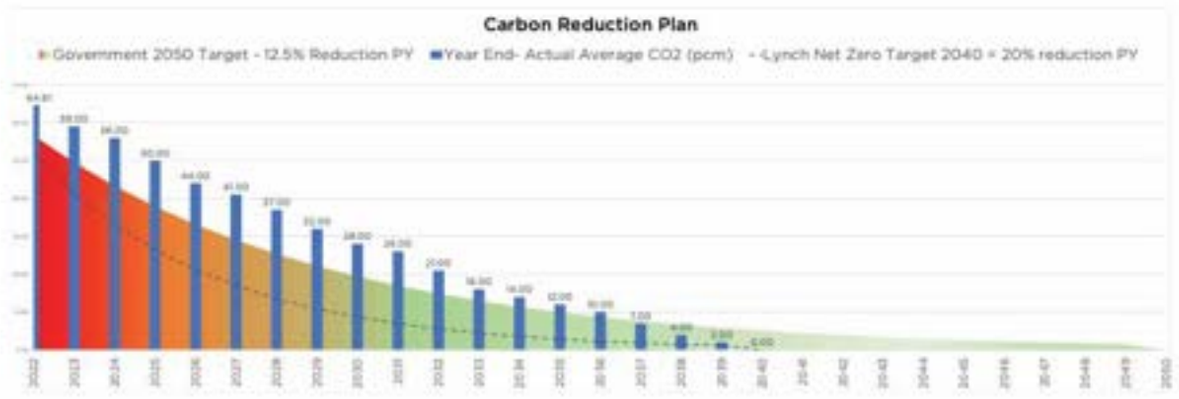
GOING FORWARD

Forecasting:

The graph below is an example of an Individual Carbon Reduction Plan which shows:

- The drivers' actual performance (the blue bar)
- The government target to reach Net zero by 2050 (the traffic light coloured area)
- The Lynch net zero target of 2040 (the dotted line)





A similar graph can be made with a month-by-month overview. By doing so, it would help us identify a driver who has plateaued.

For example, if a driver's CO^2 emissions average has not improved by March compared to their January average, we can send the driver on a vigorous training to help him/her/them get over that hurdle. In the following 3-6 months, we should see an improvement in the figures.

OUR CUSTOMER SAYS

"Reducing carbon emissions and improving air quality are central to SCS sustainability targets. Lynch's innovative telematics reporting systems and behavioural training are helping SCS achieve these targets"

SIMON TAYLOR, SENIOR ENVIRONMENTAL MANAGER
SCS HS2

OUR CUSTOMER SAYS

"Being in and around plant for nearly 30 years now, the improvements on safety have been progressing every year at a nice steady pace. Importantly, educating all operators that today, being an efficient operator is just as important as being a safe one. Every day you hear about the Carbon zero targets on our busy roads, but in our sector, we must play our part too. Ensuring we turn the machine off when not in use, using correct power modes, understanding warm up/ shutdown procedures etc. Education of the Eco-driver training is paramount on our fantastic projects ensuring we lower CO2 emissions and fuel usage. All this while also saving our customers money. The data proves this, and the feedback is fantastic. By working with our clients, we can make our sites not just safer, but also a greener place to work."

GEZ BONNER, LEAD ECO DRIVER TRAINING SPECIALIST
LYNCH PLANT HIRE & HAULAGE

"I've been operating machines a very long time. During my time as a machine operator, I've learnt that it's beneficial to educate all operators on their driving techniques. Especially operating on Eco-mode. Simple things such as following the procedures, and shutting down the engine when not in use, can contribute towards a better environment, cleaner air for our children and more fuel cost savings for our clients. I am more focused on reducing my idling because of the training."

DORAN EDWARDS, ONE OF OUR IMPROVING DRIVERS
SCS HS2

CONCLUSION

This exercise has allowed us and the customer to identify that Operator behaviour and driving techniques have a direct influence on CO^2 emissions. It has allowed us to improve our Eco Operator training programme by utilising historic data, operator training, customer collaboration and operator feedback.

Overall, there was a combined idle reduction from 41% to 24% during the course of 3 months. There is a positive correlation between education which leads to lower idling and CO^2 emissions.

In due course it also leads to a reduction in fuel costs for our customer. **In this exercise, the fuel savings amounted for approximately £10,000 for 16 machines**. If we were to do the training for all operators onsite (including all other suppliers), this could lead to a substantial amount of fuel savings cost per year for HS2.

In addition to the environmental and financial benefits, it also benefits the operator's health in the long run due to cleaner air quality on site. These realisations have led to actions and a commitment by all plant operators involved to help reduce their environmental impact at work.

NEXT STEPS

The identified hot spots allowed us to come up with an individual Carbon Reduction strategy plan for each operator which gives them a better direction of where they are and where they are going in order to reach **Net Zero Carbon by 2040 (Scopes 1 & 2) - Scope 3 by 2050, in line with government targets**.

Our next step is to work closer with our major customer management teams and develop a new case study, focusing on the implementation of the carbon reduction strategy across a major site. Our aim will be to monitor the progress in reduction of carbon emissions, however we are also interested to look at other factors that also have a major impact i.e: the weather.

We are looking forward to continue our collaboration in the future with HS2 and all of our other customer to understand their priorities and approaches on their own journey to Net Zero.

CONTACT OUR TEAM

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OUR PILLARS

Our strategic pillars govern everything we do,
Helping Our Customers Build Britain's Infrastructure.

This project aligns to:

NET ZERO CARBON

Delivering **5-star customer service** that exceeds expectations.

DIGITAL BY DEFAULT

Embracing digital solutions for a seamless customer journey and **enhanced colleague experience**.