Manchester Metropolitan University

Innovate UK KTN

# Decarbonising Supply Chain: Case of UK based Food Supply SME


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# Project Background

**Knowledge Transfer Partnerships (KTP)**

- For over 45 years Knowledge Transfer Partnerships have been helping businesses innovate for growth by accessing the UK's leading knowledge base.
- Projects are designed to build long-lasting and mutually beneficial collaborations between the working and learning worlds.
- Collaboration between Manchester Metropolitan University and Dunsters Farm Ltd which is funded by Innovate UK.
- This KTP project is broad, focusing on supporting management capabilities, resilience and sustainability within the company.
- KTP Associate*

Manchester Metropolitan University

UKRI Innovate UK KTN

Dunsters Farm

# Case Background

- The organisation is a third generation, family run wholesaler.
- The company store chilled and frozen foods and drinks to catering operations throughout the North of England.
- The largest customer segment is education catering.
- This is an Award-winning, Living-Wage employer, Good Employer Charter member.

# Operational Data for Nov 2022- Oct 2023

- 51,611 deliveries made
- 1,010,509 miles covered
- 3,050 Product lines
- 1,000 new products added
- 21,128 calls answered
- 28 new team members joined
- Turnover £25M

# Challenges faced by Food Sector SMEs

- The financial and social contribution of SMEs to economic welfare of a country is well established. SMEs represent 99% of all businesses in the European Union (EU) and employ around 100 million people, account for more than half of Europe's GDP.
- Fast paced and challenging
- Condensed lead times. Orders placed today are delivered tomorrow. Whatever happens today is history next day.
- Rapidly growing industry with instability.
- Tough competition from National "big" players
- Post Covid Challenges and Environmental regulations constraints
- Social value evidence needed in all public sector tenders


DUNSTERS FARM FOODSERVICE

# Research Objective

*To study the trade-offs between supply chain efficiency and sustainability for a foodservice SME based in North-West of UK.*

# Research Methodology

Longitudinal case-study, running for 2 years in a foodservice company in one of the most deprived areas in UK.

**Stage 1: Focus groups for Sustainability and Social Value Strategy**

To identify factors for constructing a sustainable and social value strategy for a logistics supplier.

Explorative semi-structured interviews (30) and focus groups (3) conducted regarding the use of digitisation to support sustainability initiatives

**Stage 2: Literature review and Framework**

Number of factors were reviewed from literature and from Stage 1.

Endogenous:Structural, Commercial, Operational, Functional and Product related factors

Exogenous: Technology, Infrastructure, Market, Behaviour, Energy and Regulations.

**Stage 3: Experimentation, Implementation and validation across activities.**

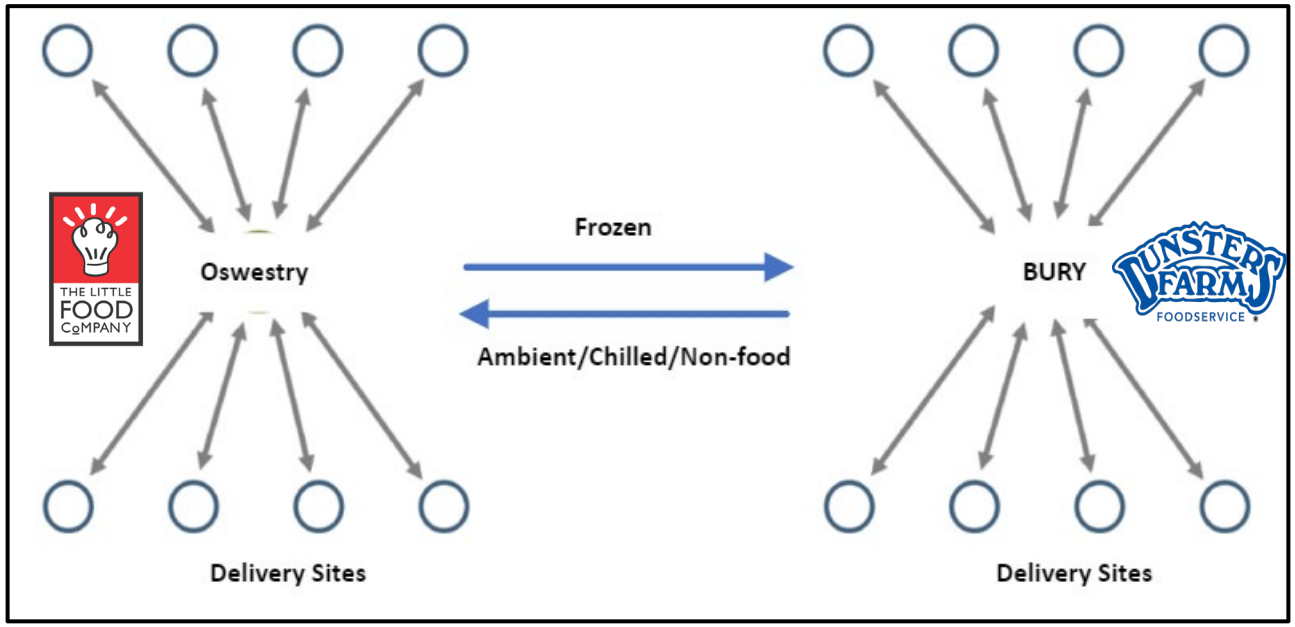
Empirical findings that have helped to reduce the fuel consumption and specify some challenges faced.

-Piecyk, M.I. and McKinnon, A.C., 2010. Forecasting the carbon footprint of road freight transport in 2020. International journal of production economics, 128(1), pp.31-42.

-McKinnon, A. (2018) “Balancing Efficiency and Resilience in Multimodal Supply Chains”, International Transport Forum Discussion Papers, OECD Publishing, Paris.

# Structural Factors

**Hub and Spoke Model:**




- Bury site specialises in Ambient, chilled food and non-food Products.
- Oswestry site specialises in Frozen Products.
- Two overnight truck vehicles transfer products between the sites (80Miles).

Benefits:

- Reduced miles
- Reduced energy consumption

Challenges:

- Difference in Volumes between the sites

# Commercial Factors

**Backhauling**

- After deliveries, our vehicles collect products from suppliers instead of running empty miles.
- This is 3% of our suppliers resulting in reduced miles and pays for all expenses.
- A food wholesaler based in South England backhauls used oil, cardboards and plastics.

**Supplier Connections**

- Some suppliers who specialise in delivery to educational institutions contact us for delivery of their products.

**Alliance and Networks**

- Dunsters are part of buying Group named Caterforce
- We have arrangements to supply their products in the region.


**Challenges:**

- Restriction on driving hours
- Complexities in sharing benefits

# Operational Factors

**Delivery time windows**

- Primarily Educational catering.
- Limitation on delivery windows.
- Governed by contracts for instance any failed deliveries, next day before 10am.

**Number/Frequency of Deliveries**

- 1 pallet delivery 4x per week or 2 pallet delivery 2x per week.
- Demand fluctuations by storage and seasonality.
- Customer communications have helped.

**Pallet space utilisation**

- Recording pallets spaces available and pallet spaces utilised.
- Data analysis has helped to review and improve the vehicle utilisation.

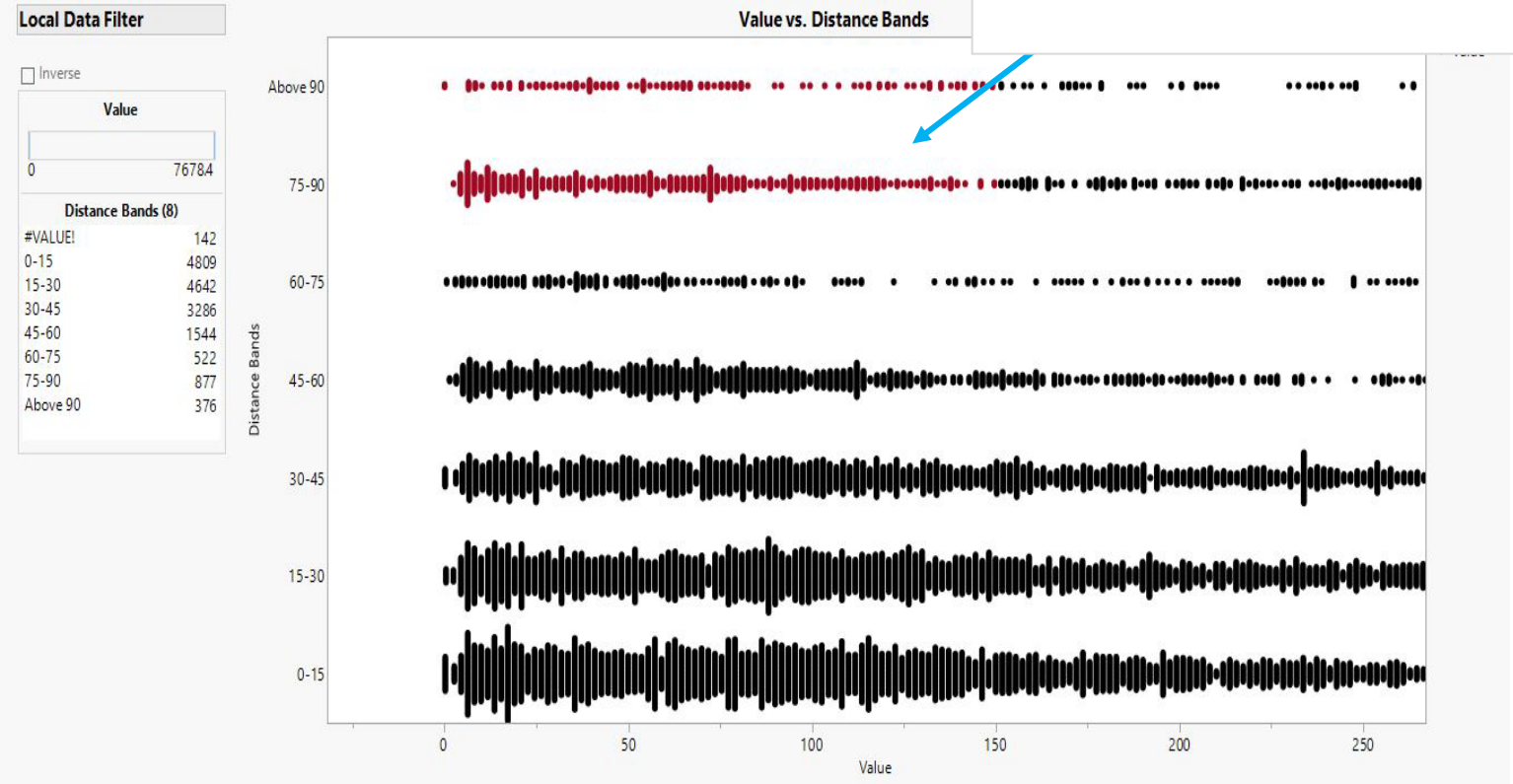
**Order Size**

- Order value per drop is one of the highest among the buying group.
- Customer data analysis

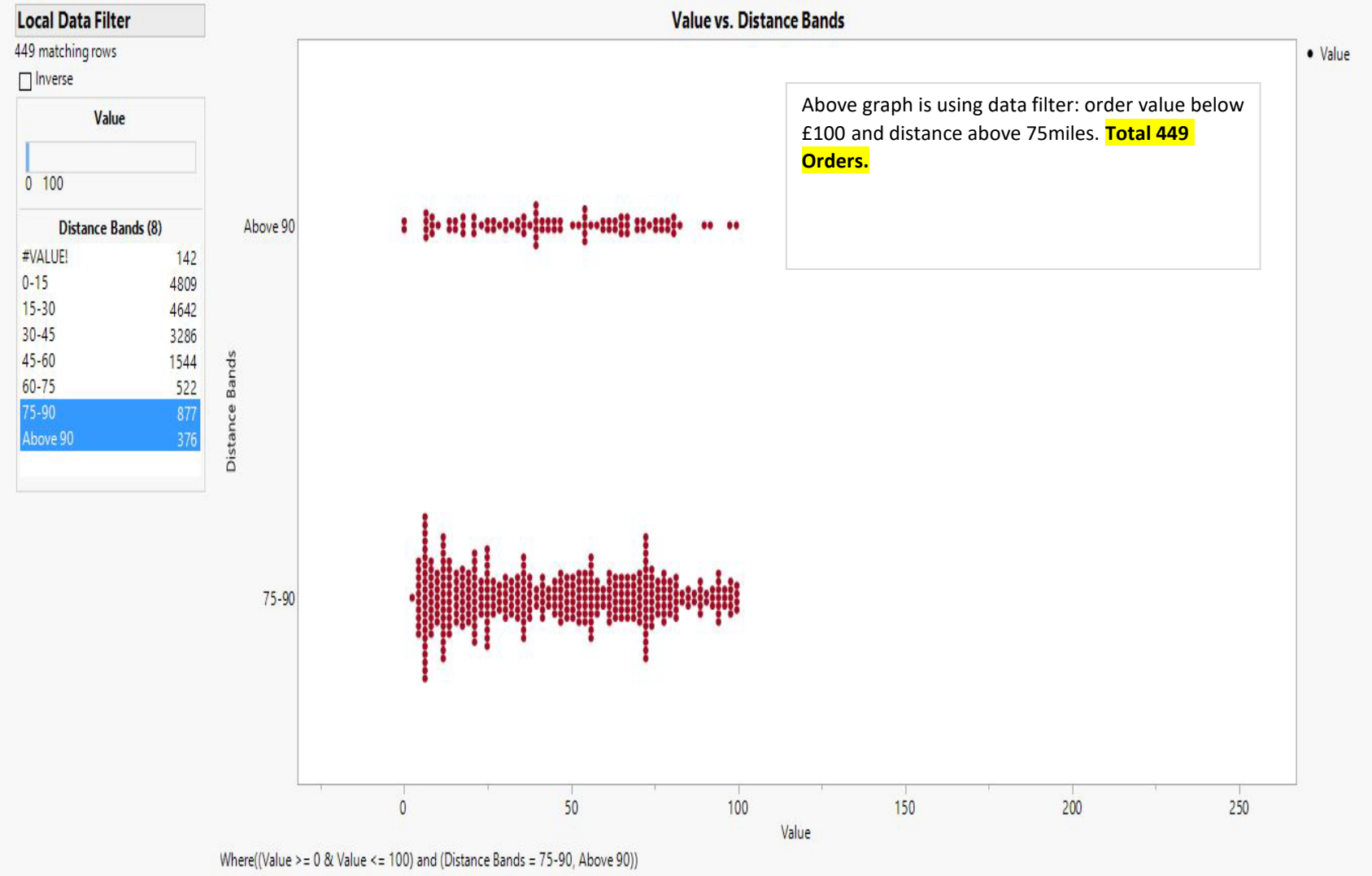
# Customer Analysis

For all the analysis data considered: Two Months
Each dot represents a single order
Y-axis: The distance (in miles) between Dunsters Postcode and the customer's Postcode (considers latitude and longitude) is classified into bands.
X-axis: The value (in £) of each order.

Each **red dot** represents distance each order value below £150 and distance above 75miles.



# Customer Analysis



# Functional Factors

**Process Mapping**

**Routing**

- Fleetmatics
- Determine all the costs of the transportation and delivery
- Compare planned vs. actual route performance
- Plan and Drop off heavy items first
- Change delivery times and frequency to create more efficient routes
- Preventive maintenance (and others Tyre pressures, fuel leaks etc)

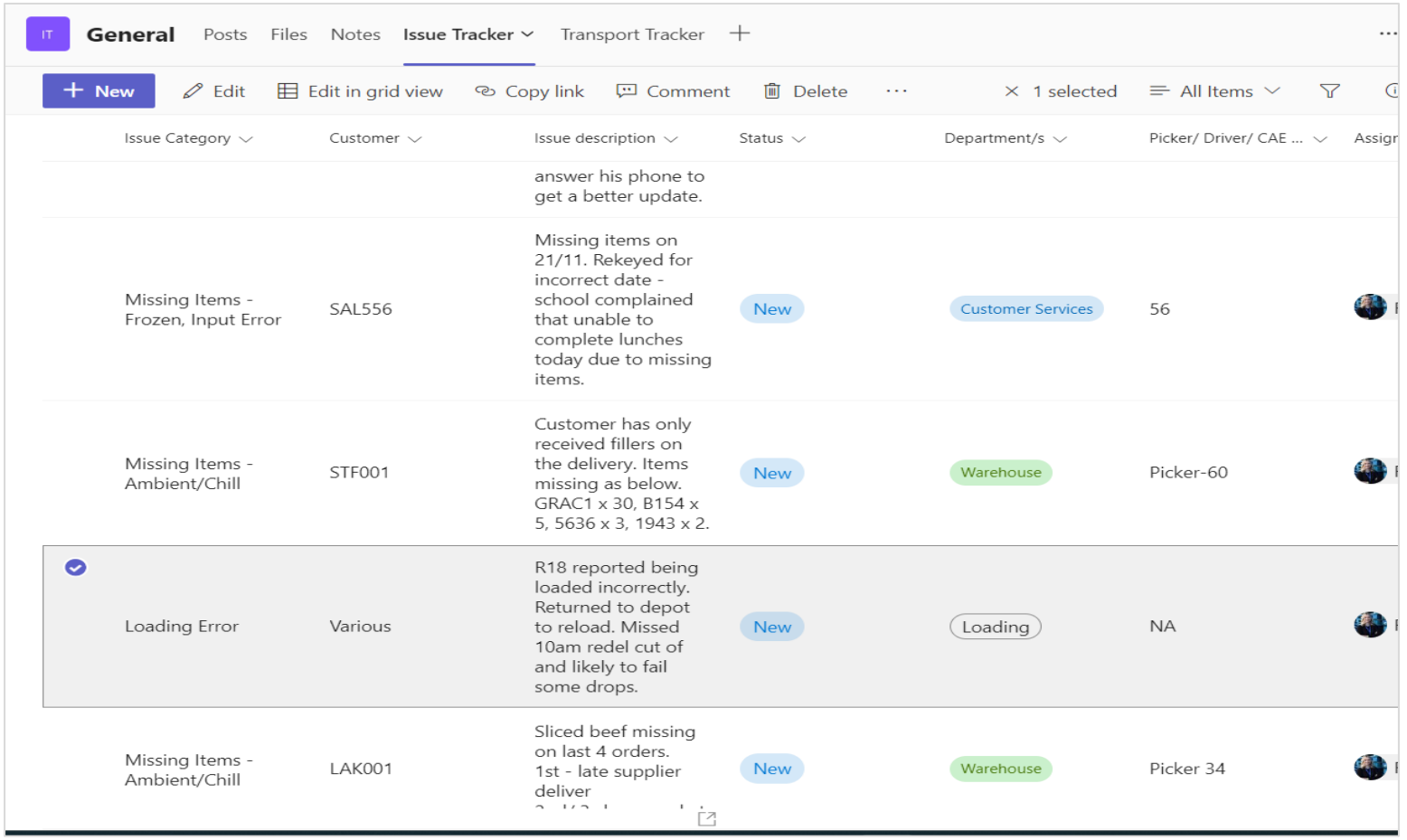
**Errors leading to Re-deliveries and extra miles**

- Tele-sales
- Picking process: Voice picking
- Loading and Delivery

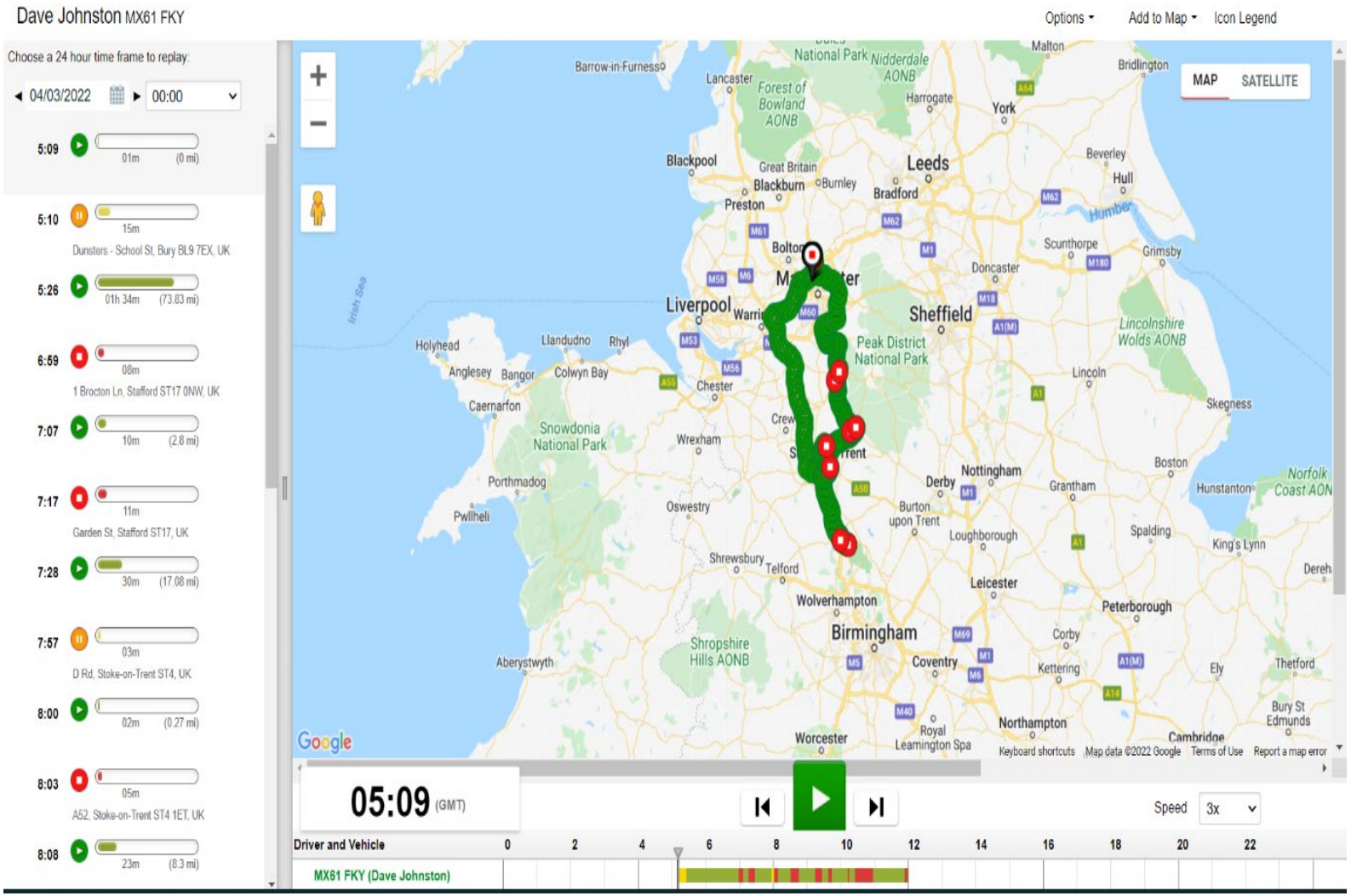
# Reduction of Redeliveries

## Issue tracker

This has been helpful to reduce the redeliveries and hence reduce extra miles.



# Opportunities



# Technology

## Challenges

- Route optimisation vs value proposition
- Efficient use of systems and tools
- Integration fleetmatics and ERP
- Underutilised data

## Initiatives

- Update and leverage data
- Training
- New fuel Management system

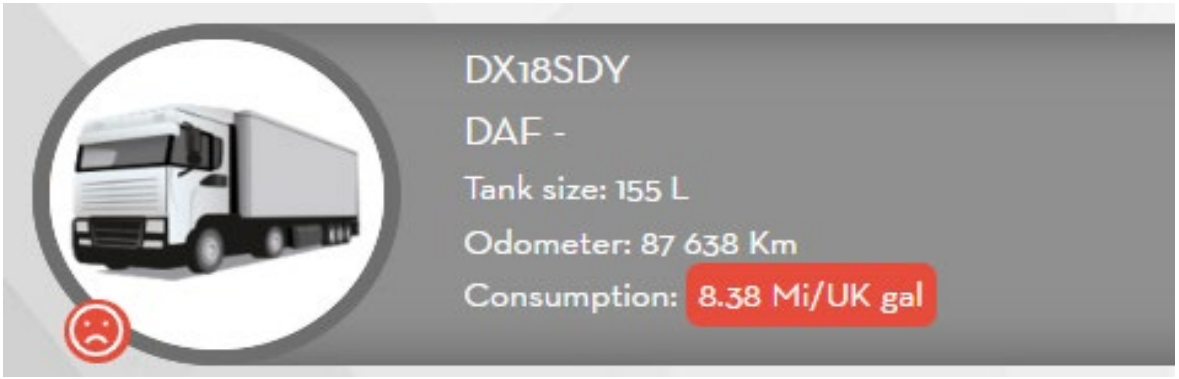
# Fuel Management System

**For a relatively large fleet there are challenges**

- To record fuel dispensed.
- Mileage.
- Plan Maintenance.
- Fuel tank levels in Yard.

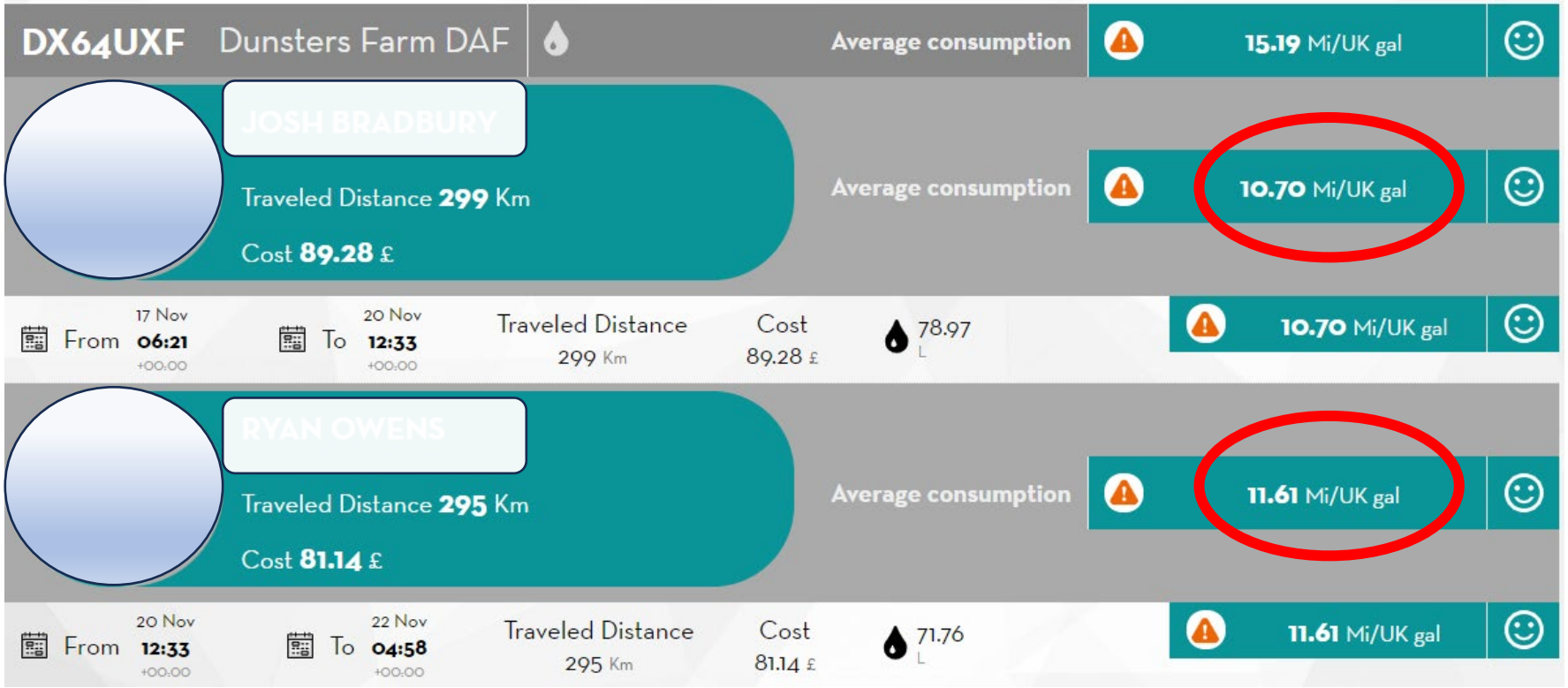
# Fuel Management System

## Comparison of Vehicle performance




# Fuel Management System

## Comparison of Driving behaviour



# People and Behaviour

## Challenges

- Industry wide perceptions
- Organizational resources and support
- Relationships between different departments
- Training and awareness

## Initiatives

- Objectives and key results (OKRs)
- Rewards and incentives
- Staff events to highlight environmental efforts
- KPIs

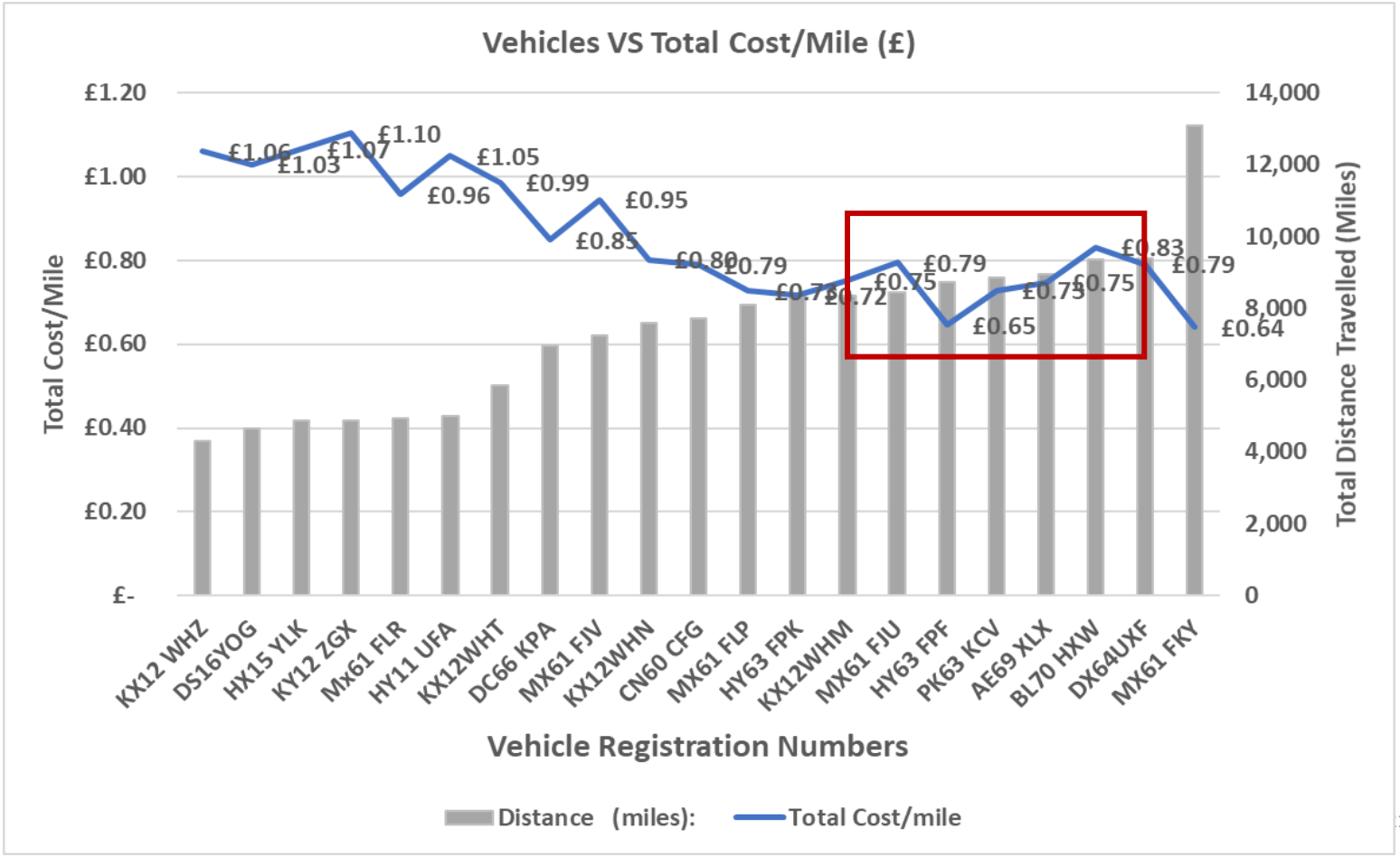
# Vehicles and Cost per mile

For all the analysis data considered: Two months

Data from Fleetmatics tool

Y-axis: Total Cost (Stop cost + Fuel Cost + Driver Cost)

X-axis: Vehicle registration numbers



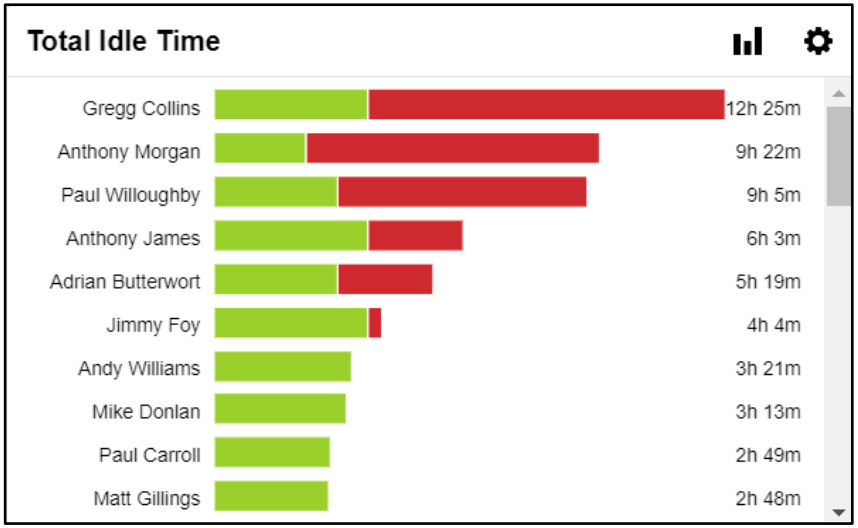
# Driver Behaviour

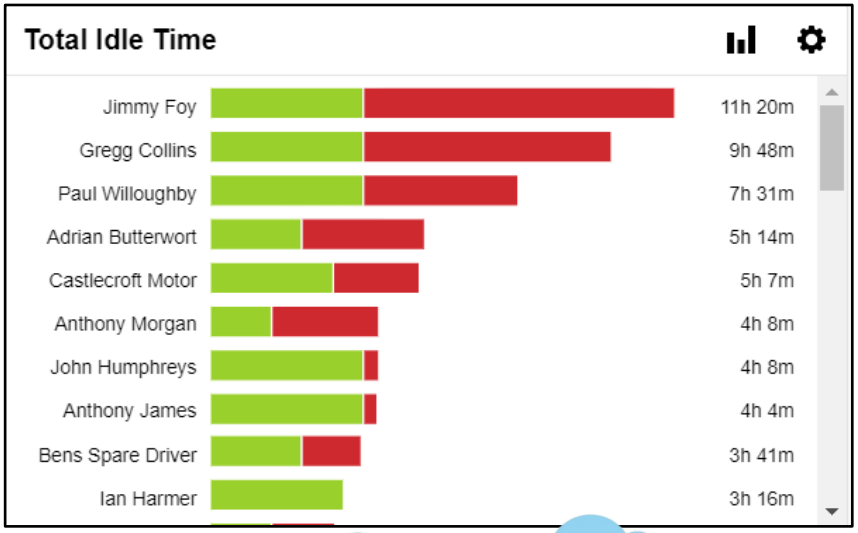
## Driver Behaviours:

- Idle time
- Stoppages
- Harsh braking
- Speeding
- Maintenance
- Overall safety score

## Initiatives

- KPIs/Information radiators have helped to change the driver behaviour.
- The role of driver trainer and Transport debriefer for best practices
- The driving behaviour is a part of incentive scheme.



# External Factors

## Financial Pressures

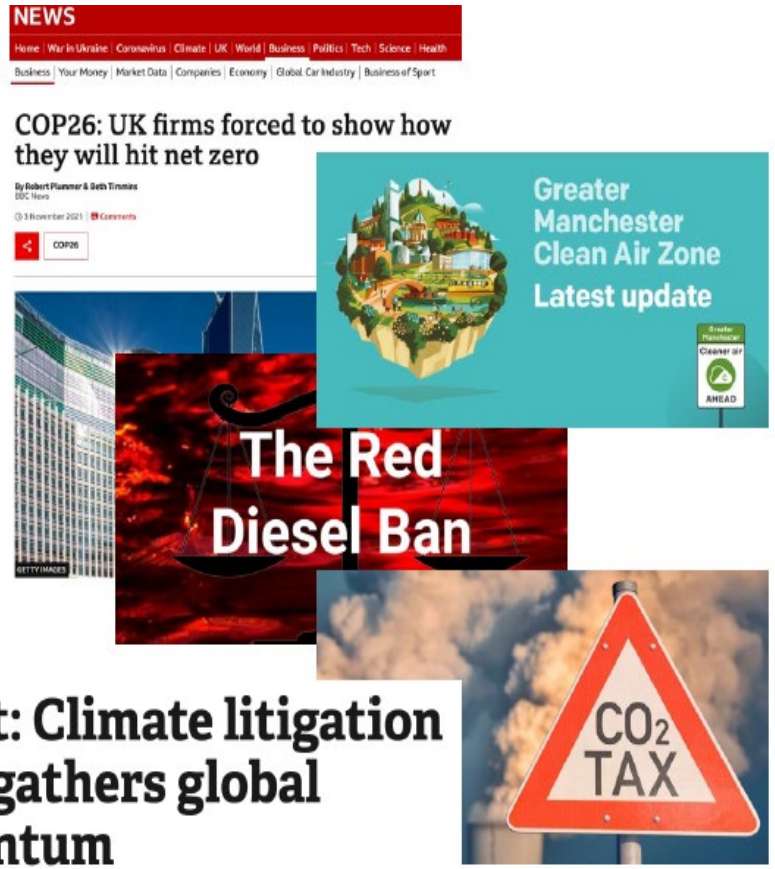
- Aging Vehicles
- Fuel prices

## Resource and Infrastructure

- Availability of Drivers
- Alternate fuels

## Changing Regulations

- Greater Manchester clean
- Tender requirements
- Vehicle operations



# Summary

- The foodservice sector demonstrates complex barriers to navigating trade-off priorities between short-term ‘survival’ mode and long-term carbon reduction.
- This SME has adopted a pro-active approach evidencing a maturity to transition and adopt sustainable principles.
- Presented initiatives and approaches have certainly been helpful for this SME.
- People and Culture is the key.

# Thank You