Scaling on Street Charging Infrastructure

D5.14 Final Report on Platform

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1. Executive Summary

This document represents an overall summary of the Fuuse Community Electric Vehicle Charge Point Management System developed by Miralis Data during the SOSCI project.

2. Introduction

From the scant foundations of Fuuse that existed prior to this phase of the SOSCI project, we have built an industry leading platform with flexibility, optimisation, empowerment and collaboration at its core. The SOSCI project has allowed us to develop the Fuuse Community model for use by socially aware organisations such as Charge My Street.

The document will lay out the functionality of the product, provide some plans for the future of the platform, and summarise the transformation it has facilitated within Miralis Data. Further detail on this can be found within the project exploitation plan.

3. Completed Activity

Project Deliverables

Miralis have built the Fuuse platform up from its foundations through a number of deliverables spread throughout the SOSCI project. These are as follows and relevant reports have been generated throughout the project related to these:

- D5.7 – Initial Functionality
- D5.8 – Mobile App MVP
- D5.9 – Billing, Maintenance, Reporting – MVP
- D5.10 – Finalise Charging, Investigate Domestic Billing
- D5.11 – Finalise Network Management
- D5.12 – Finalise Maintenance, Billing, Reporting
- D5.13 – Charge Point Maintenance Platform

Platform Overview

While the above represents the deliverables within the SOSCI project, they don't necessarily capture the scale of the platform that has been developed. While not all this work has been completed under SOSCI, the project provided the resources that have allowed us to dedicate time and effort in to develop a product that is ready for full commercialisation.

Fuuse is a charge point management platform designed to help anyone with chargers maximise the value of their chargers. Developed in partnership with drivers, charge point operators, local authorities, installers and industry experts, Fuuse is customer focused and independent of any charger manufacturer, ensuring customers will get software that works for them.

As an overview, Fuuse provides the following features:

• Secure cloud-based platform that lets you manage your chargers and monitor their usage

• Works with all OCPP 1.6 chargers and brings together different charger manufacturers under one platform

• Unlock revenue from your chargers by using our Fuuse Billing module to open your chargers to the public

• Take control of your chargers and make them work for you with our flexible access controls and comprehensive tariff and subscription management

• Save on energy cost and maximise utilisation by using our reporting tools and alerts to optimise charger usage

• Modular platform, so you only pay for the functionality you need

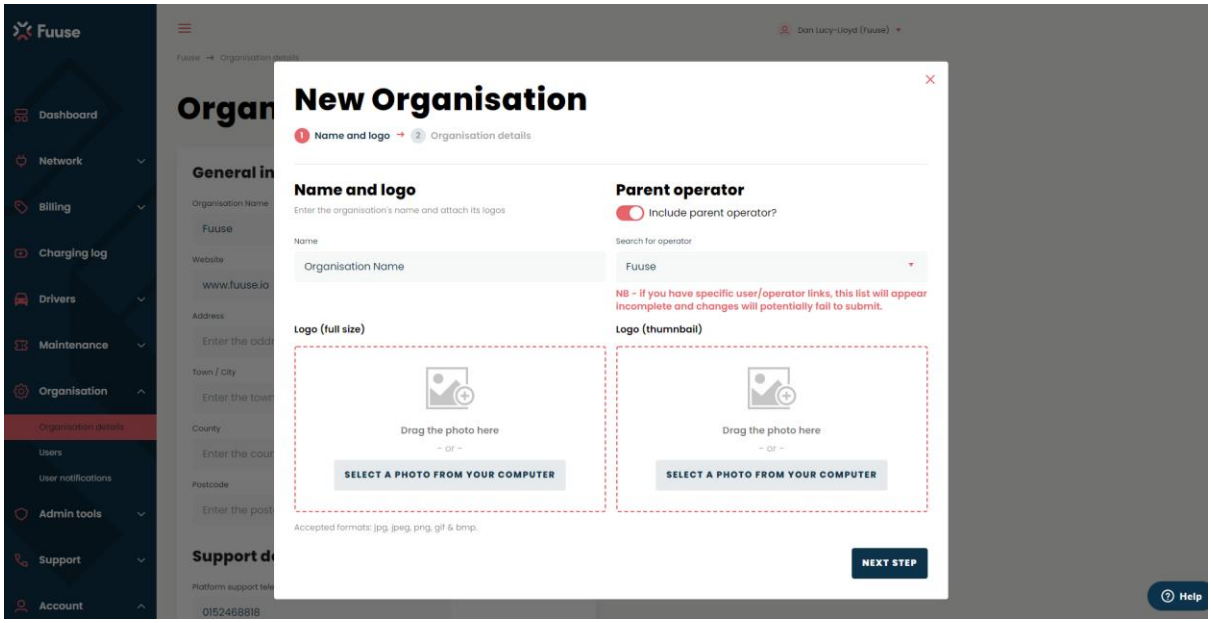
• Works with multiple use cases, from fleets to individual workplace chargers, to local authorities, to national networks with thousands of chargers.

• Back-end platform that can be fully white-labelled

• Fully OCPI 2.2 and 2.1 compliant to be ready for roaming and interoperability.

Functionality for Operators

The main functionality of Fuuse lies within its operator platform. This provides the tools required to operate and manage charge points.

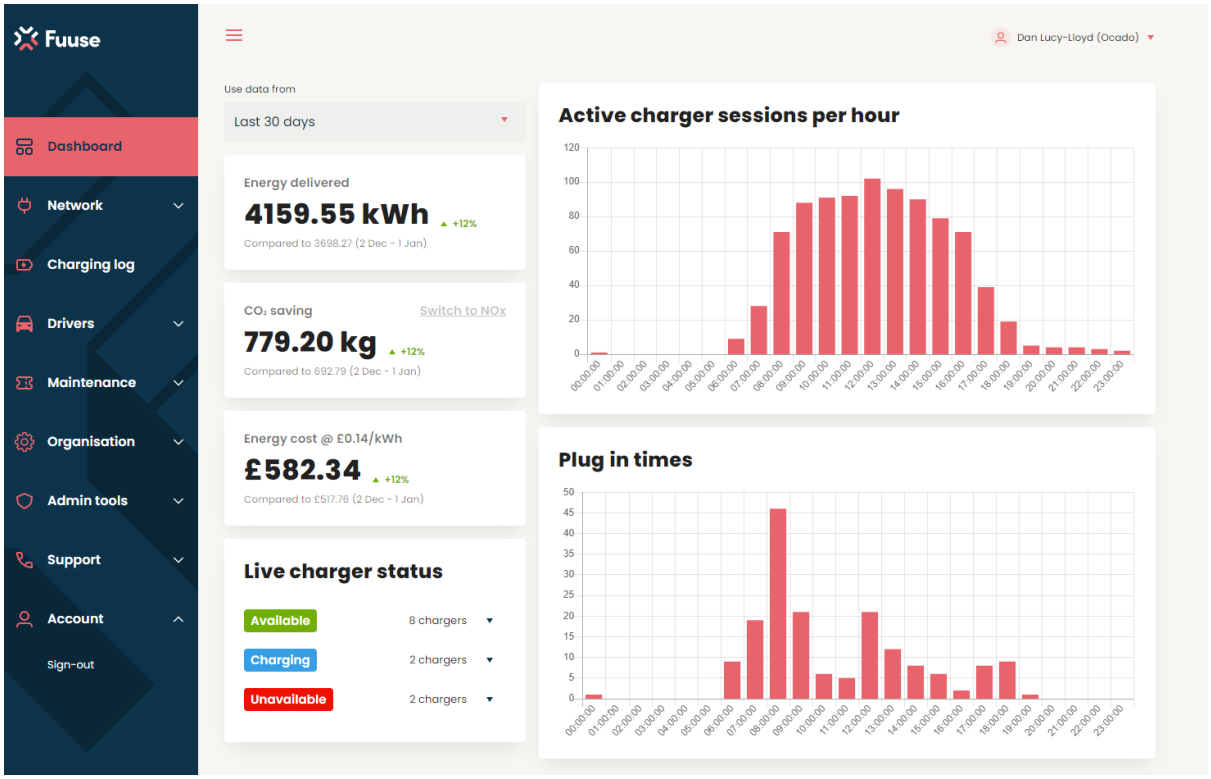


Dashboard

The dashboard provides a top-level overview of what's going on on a customer's network.

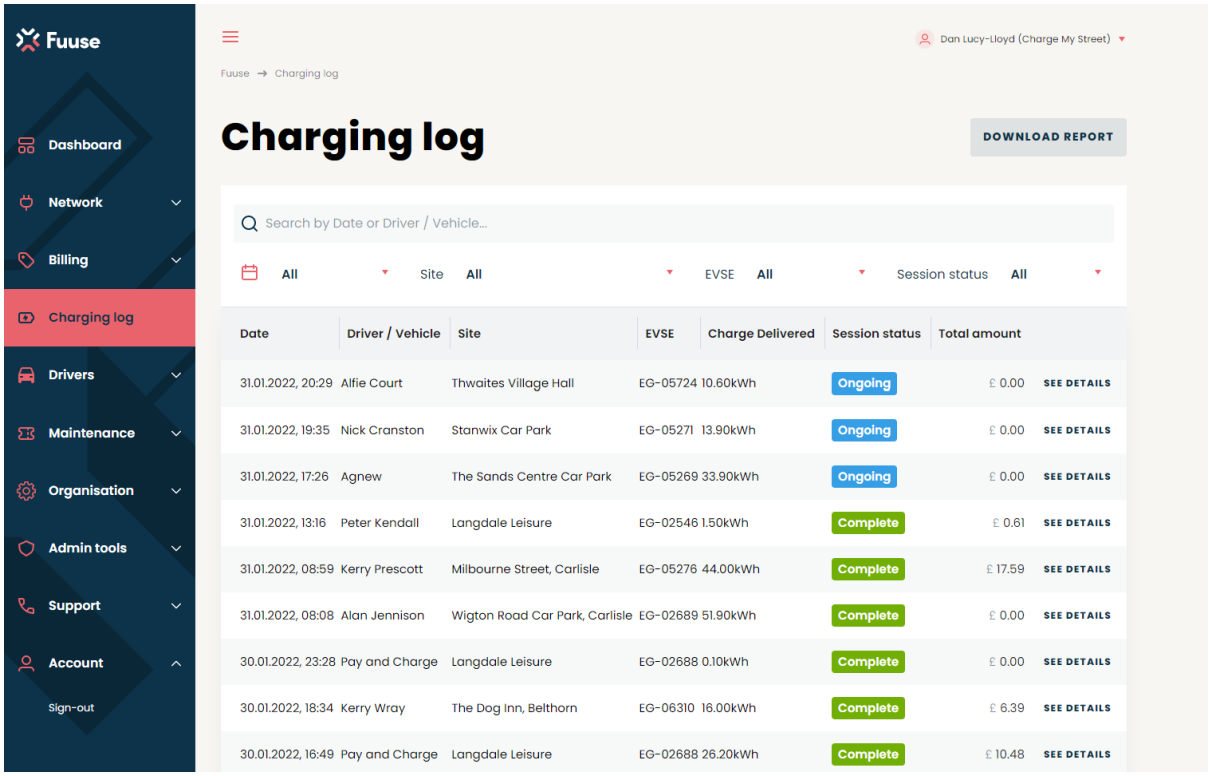
It gives quick visibility of any charger issues as well as providing information about energy delivered, CO2 and NOx savings, and costs of charging.

In future, we plan to expand this with additional widgets that provide additional insight to customers.

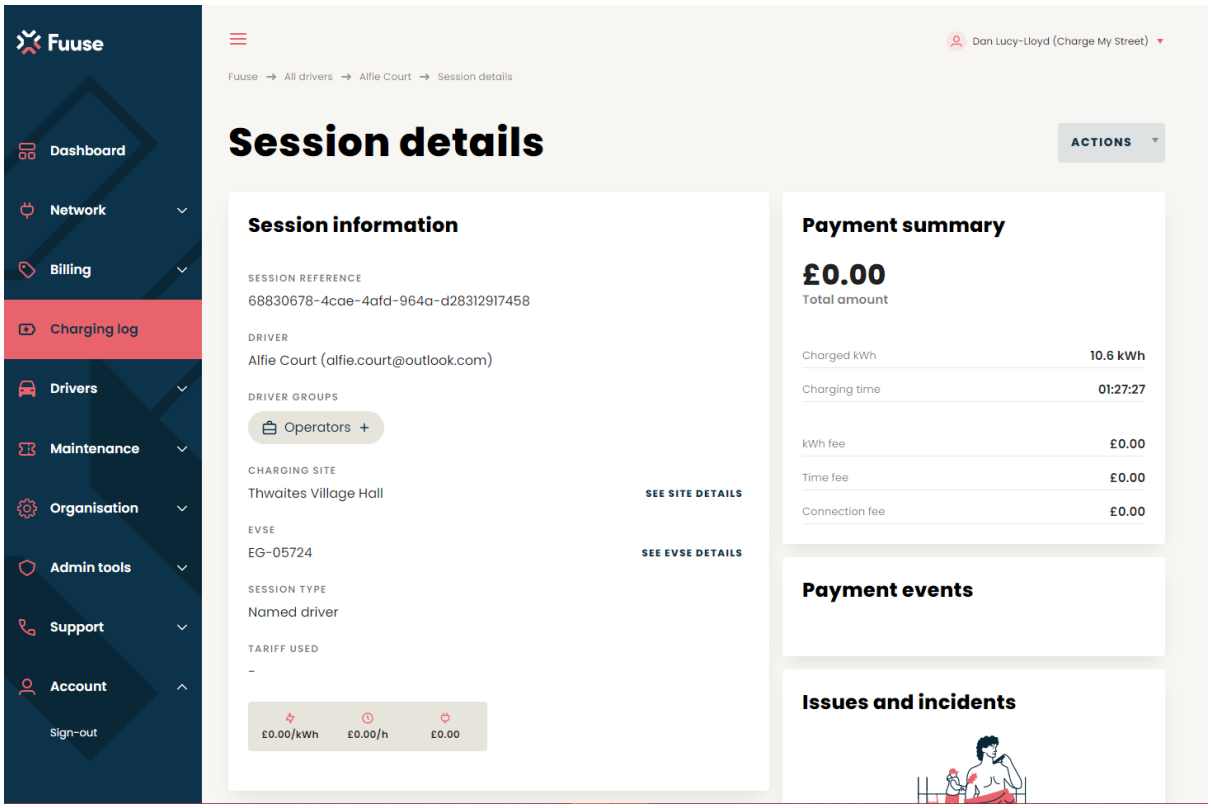


Charging Log

The charging log provides details on all charging sessions across a customer's network. Sessions can be searched for and filtered by site, charger, or status. The full session list can be downloaded as a report and this download can be customised on a customer-by-customer basis.



Individual sessions can be accessed for additional details including driver and tariff information where applicable.

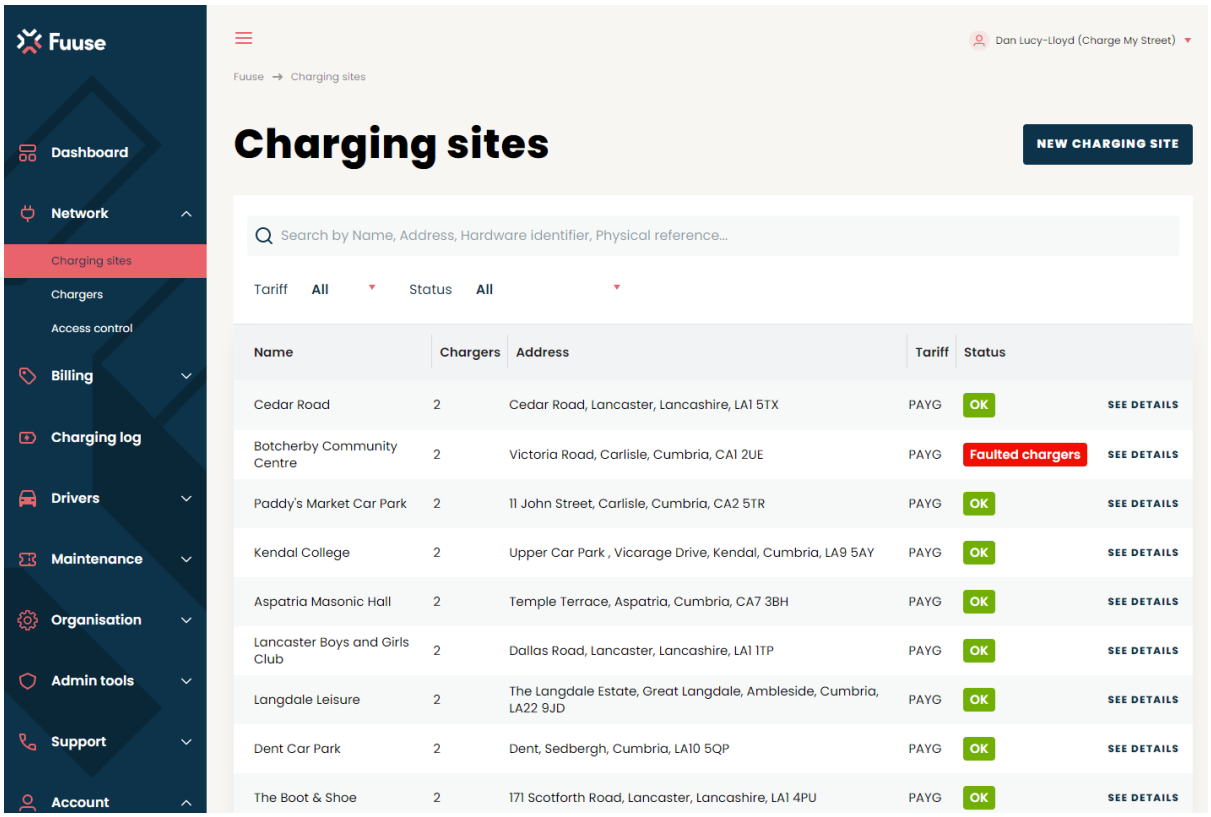


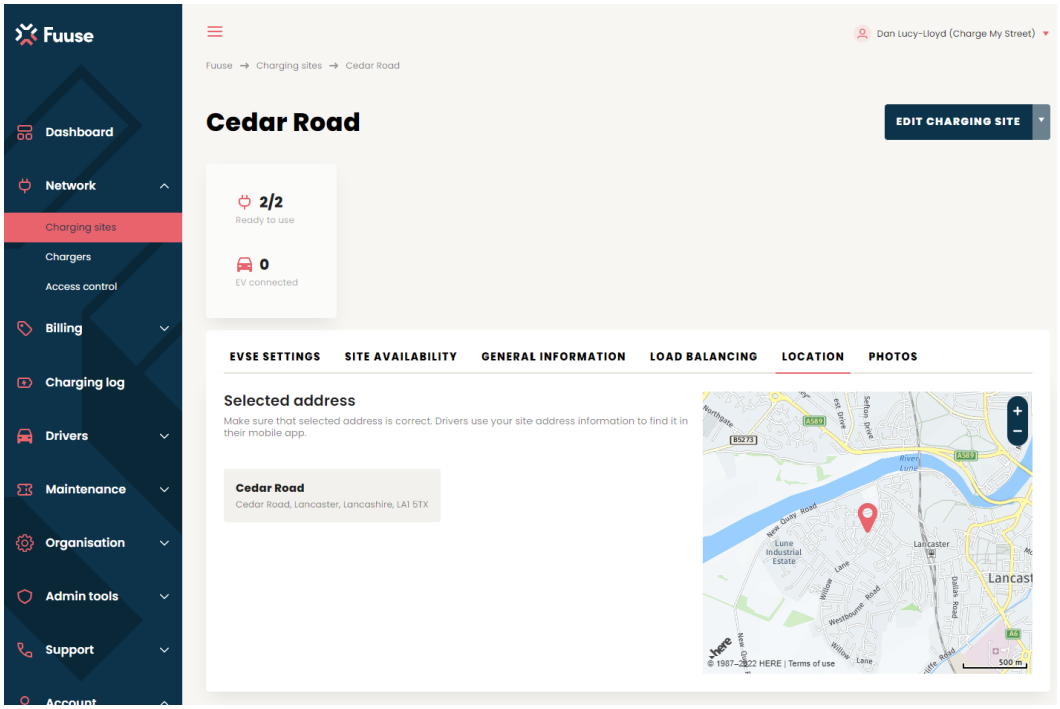
Network Management

The network management section allows you to administer the chargers on your network. This has two levels:

Sites – The locations that contain chargers. This contains information such as location, driver friendly name, load balancing profiles.

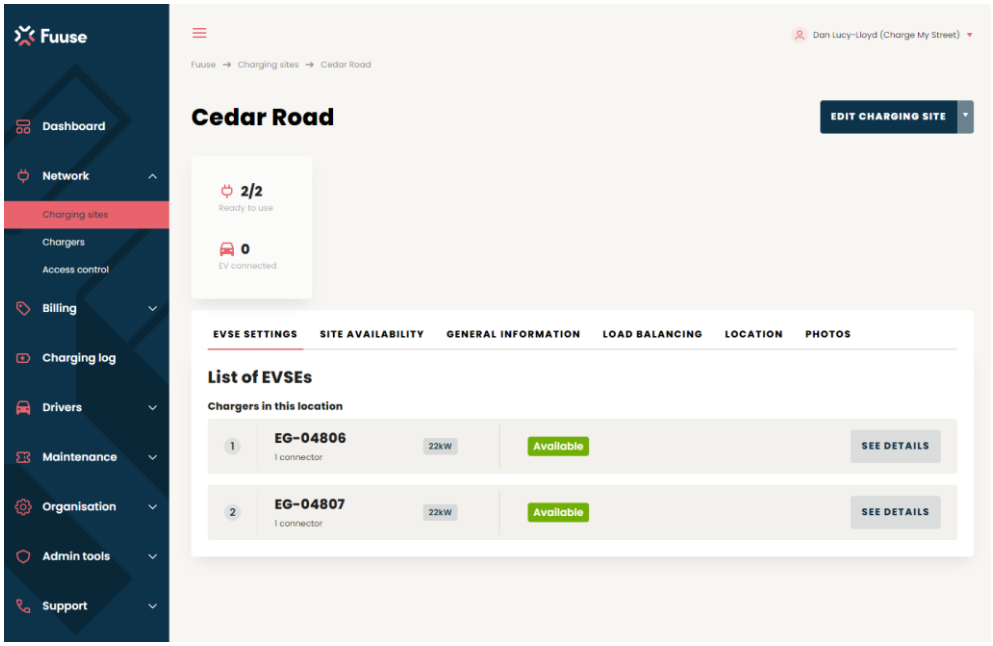
On the site view page, you can see a list of all the sites on your network along with a status of each one.



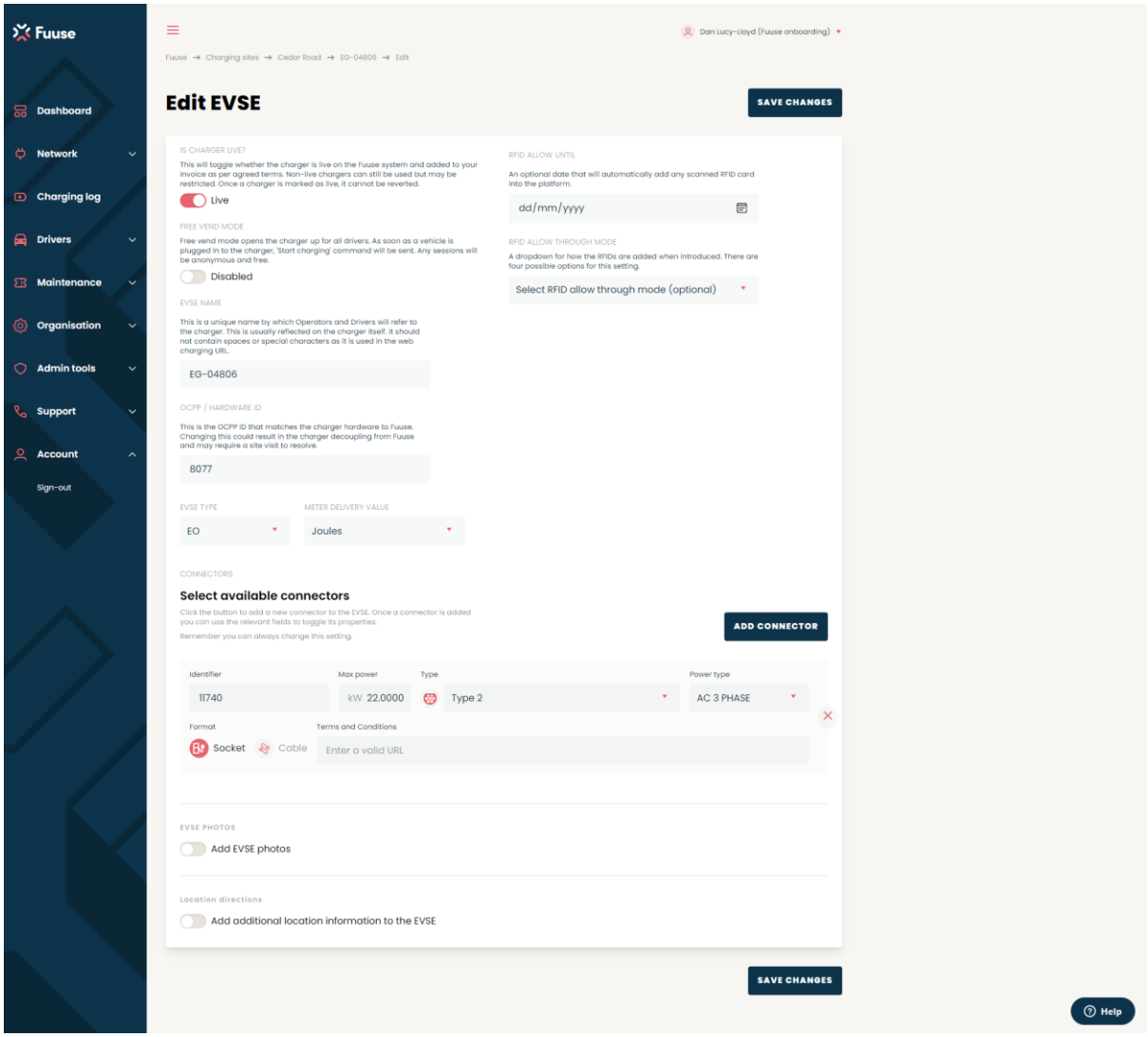


Chargers – the individual chargers themselves. These contain the information about the charger, including the technical information that links the charger hardware to our back-office platform.

Each site page contains an overview of the chargers present, including a real time status of each one.



Drilling down further allows you to see details of the individual connectors on a charger if applicable, view diagnostic logs sent by the charger, and send commands to the charger.

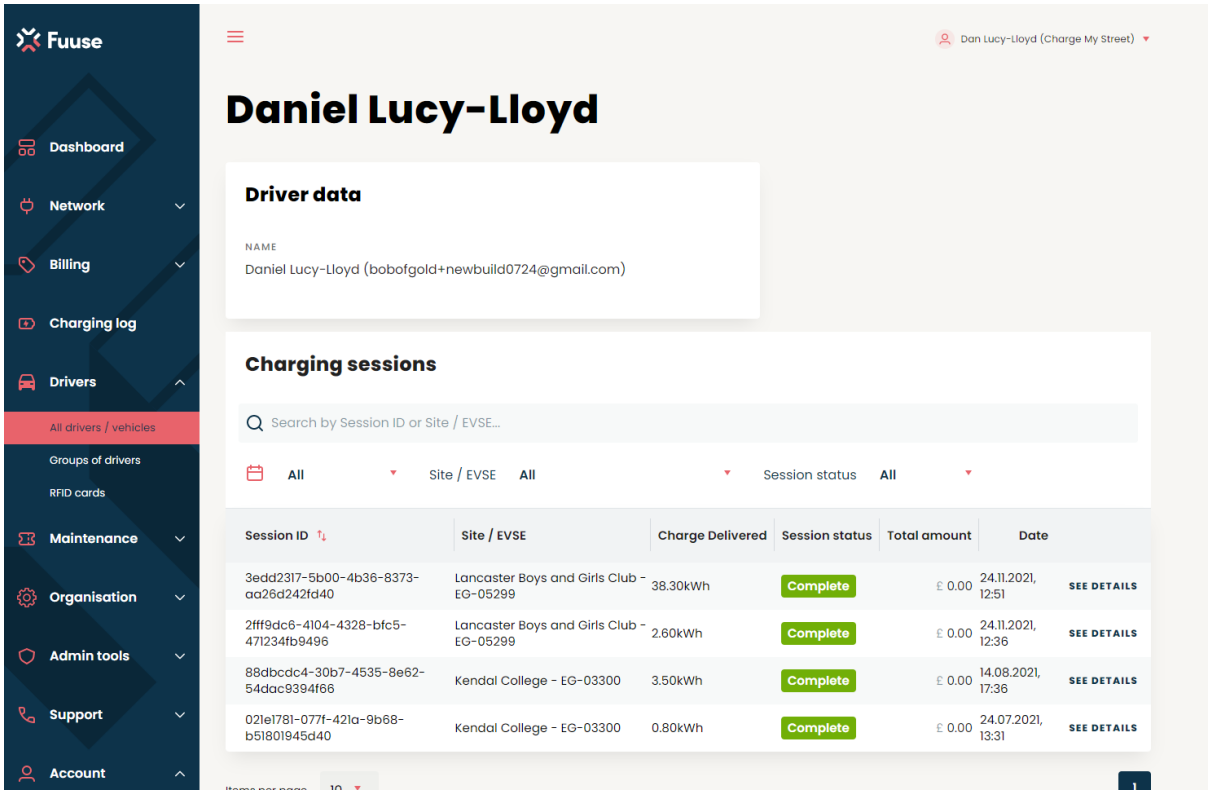


The charger setup screen allows you to enter the required connection details for the charger. Fuuse currently supports both OCPP 1.6j and EO chargers, as well as both AC and DC units.

Driver Management

Drivers can be added into the system to allow for management of their access. Drivers can be added either by an email address or a username. Once added, an operator will be able to see the Driver's history at their chargers, add them to Driver groups and control their access to chargers.

In addition to Drivers, vehicles can also be added here for scenarios where the individual driver is unimportant (e.g. pool cars).



RFIDs

RFID cards can be used to start and stop charge sessions where charging hardware supports it.

Individual RFID token can be added by Operators and then assigned to drivers to control access.

We also created functionality whereby any RFID charger can be turned in to a scanning device for adding multiple RFID cards quickly. This was very popular with installers providing their own RFID cards.

Tariffs

Tariffs are very simple in Fuuse. You can set pricing according to three factors:

• kWh – A cost to the driver for each kWh of energy delivered

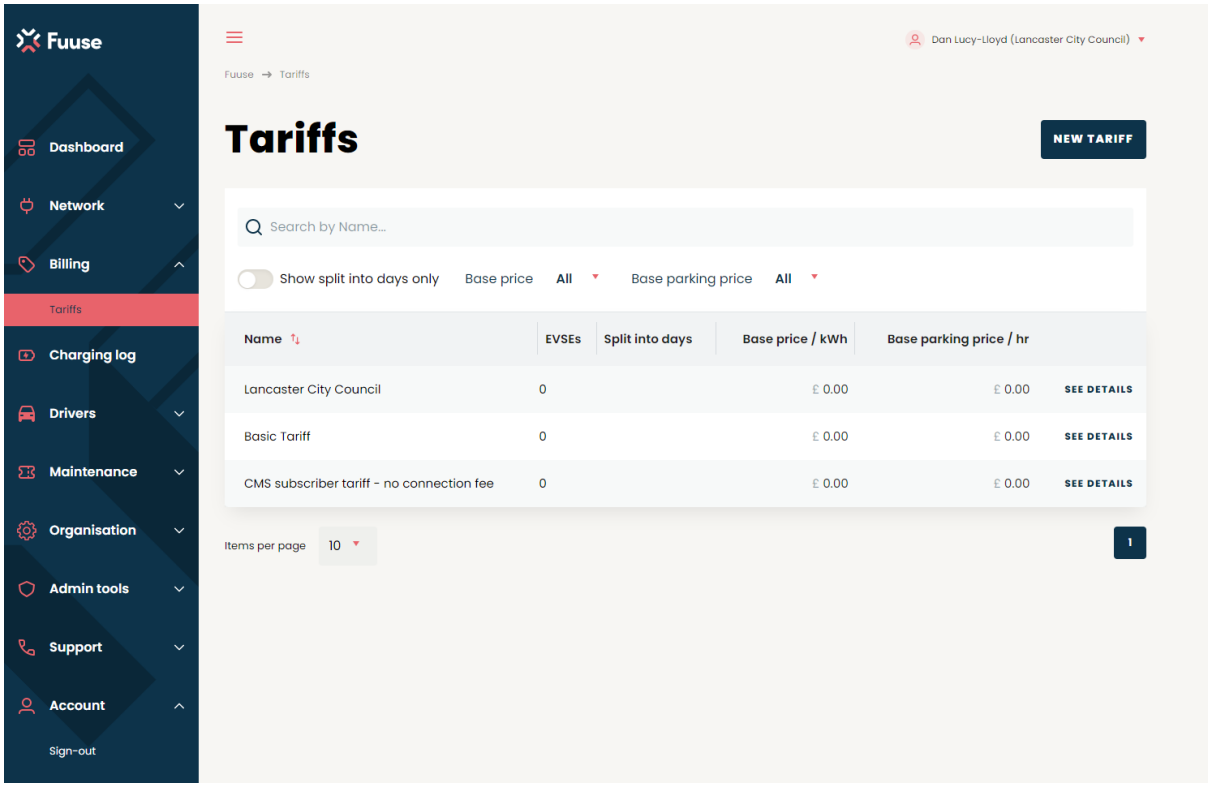
• Time – A cost to the driver for each hour a session is active

• Connection Fee – A one off fee charged at the start of the session

These can be applied individually or in any combination.

It's worth noting here that Fuuse is fully PCI DSS compliant and so able to take payments on behalf of customers. In addition to this, we are able to facilitate direct payments from Drivers to our Operator customers and this is the model that Charge My Street use.

This is currently facilitated through Stripe with whom we have done an extensive integration with.



Access Control Profiles

Access Control Profiles, or ACPs, are one of the biggest distinguishing features within Fuuse. Developed under the code name “Ady Says Yes” after Charge My Street’s project Manager Ady, they were designed to empower our customers to be able to use their chargers on their terms. We found early on that many site owners wanted to retain a level of control over chargers by only allowing access at certain times or charging different amounts at different times of the day or to different people. We built ACPs to accommodate this.

Each profile allows you to specify:

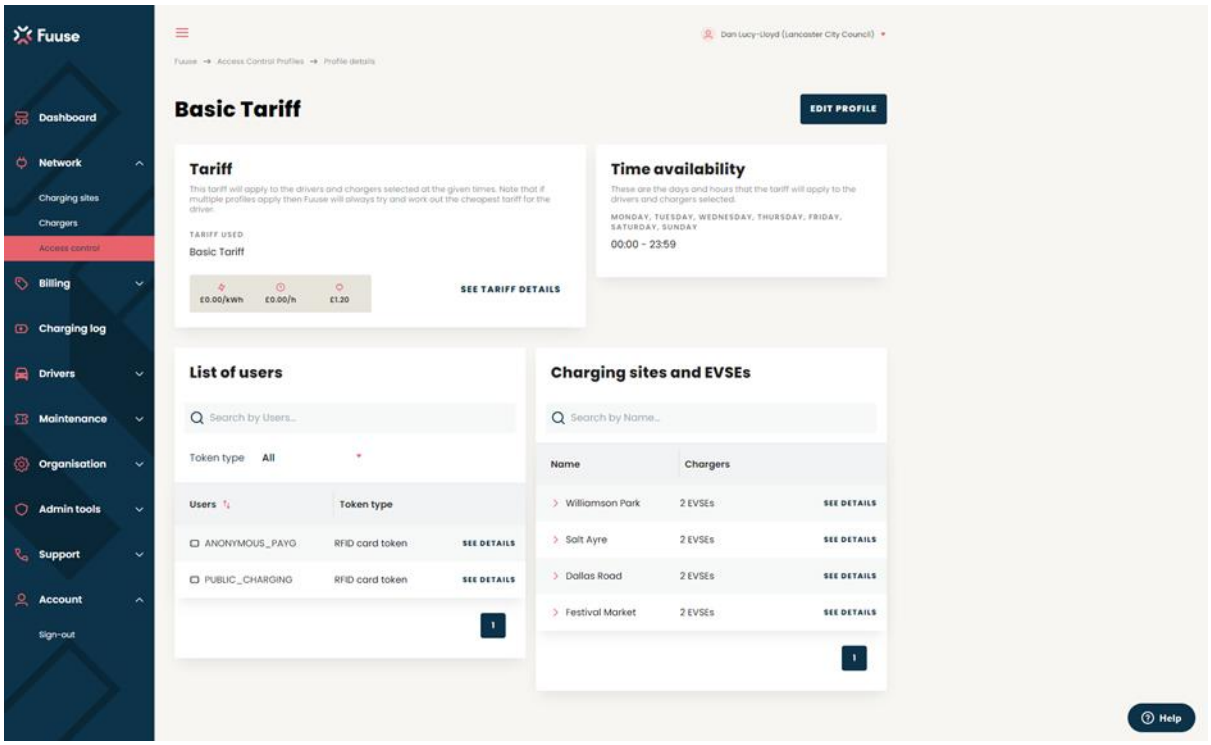
- A tariff
- A pre-authorisation amounts
- Time and day of the week parameters
- A list of Drivers, Driver groups, RFIDs or Vehicles
- A list of chargers

And to apply them all together to say:

> *“These people can charge at these chargers, at these times, on these days and they will pay this much when they do”*

Setting the pre-auth amount allows you to specify what funds are held when a Driver starts a transaction based on the level of trust. If drivers are known, identifiable through the app, and using the same chargers regularly then you might set a low pre-auth amount, but in more anonymous scenarios you might specify a higher amount to mitigate the risk of failed payment upon completion of charging.

It is possible to specify as many ACPs as you like and even overlap them: the system will always work out the cheapest way for a driver to charge in each scenario.



Maintenance

The Fuuse maintenance platform is essentially a ticketing system that allows for issues with chargers to be tracked within the platform.

Tickets can be raised in two ways: manually or through automated alerts.

When raised manually, an Operator can select which charger the ticket applies to and add details about the issue including photos.

We currently have automated alerts setup for OCPP chargers in the following two scenarios:

- A charger goes offline
- A charger returns a faulted status

In this scenario a ticket will be created, and a specified user will receive an email.

Support

We also have setup a support platform for Fuuse with a dedicated Customer Success Manager to help on board chargers and deal with issues that Operators might have, and a semi-dedicated Technical Author to create content for a support platform. This is linked to directly from within Fuuse.

This does not currently include Driver support, but this may be investigated in the future.

Roaming and Interoperability

A significant amount of work was completed early on to make sure that Fuuse was OCPI compliant (this is detailed in report 5.10). We originally built to the latest OCPI standard of 2.2 but found through attempting to integrate with other parties that most of the industry is still on 2.1. So we have also added in backwards compatibility for this as well. This puts us in a fantastic position moving forwards to facilitate roaming with a large number of parties in the UK.

We have so far been working on 4 integrations, 3 one way (providing another party with access to chargers on the Fuuse platform), and 1 bilateral (allowing external party's drivers to access Fuuse chargers and allowing Fuuse drivers to access the third parties chargers. While none of these are live for real drivers yet, we have committed to Charge My Street to facilitating them all for them beyond the project. These integrations are as follows:

Octopus Electric Juice – As part of our investigation into Domestic Billing (Deliverable 5.10) we identified that the best way to achieve this was for energy companies to set themselves up as eMSPs (eMobility Service Providers) and connect in to existing charge point management systems over OCPI. Octopus have already taken this approach and we are functionally complete in terms of our integration with them having facilitated charge sessions from their system in to Fuuse. We are hopeful that this will be live shortly for Charge My Street chargers. This is already active on Mer's network (see D3.5 for results)

ZapMap and ZapPay – ZapMap is the UK's most popular charger aggregation service, and they offer the ability to pass real time charger information in to the platform over OCPI. Again, we are well underway with this integration and hope to have it live for Charge My Street chargers soon. Beyond this there is also the ability to let ZapMap app users charge at chargers on Fuuse and manage the payment for them.

Paua – Paua is an "electric fuel card" aimed at fleets that would like to provide their drivers access to Charge My Street chargers. As their system is still in development, integration has been slower with Paua but we hope to have it online in the coming months.

Mer – We had hoped to complete bilateral roaming integration with Mer's charge point management system Driivz within the timescales of the project but unfortunately it has not yet been possible. As Driivz is still only OCPI 2.1 compatible we had to spend time adding in backwards compatibility into our system. Given the positive relationships between all parties coming out of the project we have still committed to Charge My Street to completing this work.

Subscriptions

Charge My Street's model for their Drivers is that they offer them subscriptions. i.e. the Driver pays a fixed monthly amount and receives a fixed amount of kWh that they can charge within a month.

From the start of the SOSCI project we've known that this would need to be facilitated within Fuuse, but we have seen very limited demand from other potential customers.

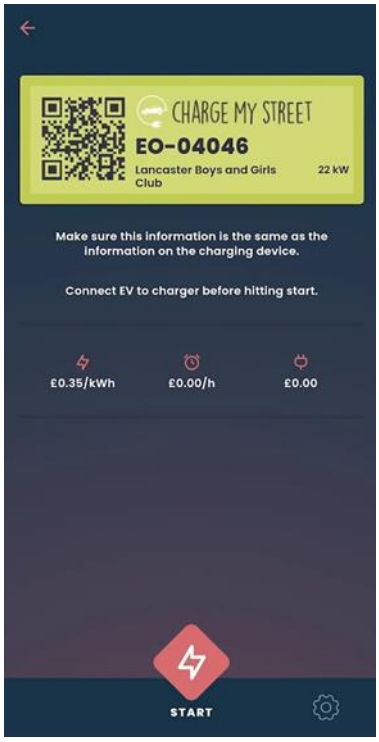
For now, we have set up the functionality for Charge My Street in a basic way.

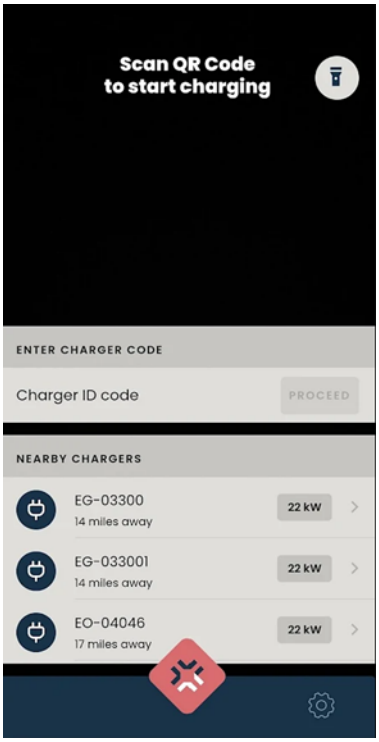
Functionality for Drivers

As well as functionality for Operators, we also provide tools to help Drivers charge their cars.

Fuuse Mobile App

The Fuuse mobile app is available on both iOS and Android allowing for access to chargers. Drivers can sign up for an account within the app, scan QR code stickers on a charger, see nearby chargers, view their charging history and charge their car.





White Label Mobile App

We have also made it possible for customers to white label the app and make it their own. This will allow us to sell it to other operators that want to maintain their own branding and limit their Drivers to their own chargers.

Explore

We have also recently completed work on functionality that displays all chargers on a map and allows for chargers to be searched for and filtered based on different parameters.

Payment Management

Another new addition is the ability for drivers to manage different payment methods within the app. This means they can add, remove and change credit or debit cards.

Web Payments

As well as being able to charge via the mobile app or RFID, we have also built functionality for Operators to allow anonymous charging via the web. This means that Drivers don't need to download an app or sign up for an account. They can simply scan a QR code using their camera on their phone and enter their card details and charge.

4. Results

Use of Fuuse Community with Charge My Street

Up to the end of January 2022 Fuuse has seen almost 53mWh of charging on the Charge My Street network across >80 chargers in >3,100 charge sessions.

Given the success of the use of the platform on the project, Charge My Street have signed on ongoing commercial agreement with Fuuse for us to continue to provide back-office systems to them. We will continue to work closely with Charge My Street to define the ongoing development of Fuuse and complete the roaming integrations that we have started within the SOSCI project.

A product ready for exploitation

Fuuse itself is market ready and already in use on over 1,000 chargers around the UK. We have already received additional Innovate UK, SBRI and other government funding to continue to the development of the product and it is now the primary focus of Miralis Data as a business.

5. Conclusions/Next Steps

Future Functionality

While we have built incredible foundations with Fuuse, and then delivered on the reality of a finished product with the help of the SOSCI project, we are aware that this is just the dawn of the innovation era for EVs. We have loads of ideas for future developments and projects but want to be more focussed on things that make Fuuse a more commercially successful product. We will be focussing our efforts on tackling the charging problems of fleets and workplaces, no matter where their drivers happen to be charging.

Here are some of the things that we're currently working on.

Smart Charging

Off the back of SOSCI, we were successful in 2021 in receiving further Innovate UK funding for a Fleet Connected Smart Charging project. This project will complete in March 2022 and we hope to have exciting new fleet smart charging capabilities to add in to the core Fuuse product beyond this point. This will be transformative in maximising utilisation of existing electrical infrastructure, while reducing costs for site owners at the same time.

Reservations

As part of another SBRI project, in partnership with Scottish Enterprise, we are also developing a reservation system that will allow drivers to book a charge point in advance. This also includes smart re-booking of chargers if they are blocked at time of reservation.

Domestic Charging

With significant policy changes coming for domestic charging in 2022, we are aware there is an opportunity for us to provide services in this previously unexplored segment. We are currently working on development of a dedicated domestic mobile app that will take in to account new legislations around smart charging, deferred charging, scheduled charging etc.

Integration with Partners

There are countless other services that we will likely choose to partner with existing organisations rather than build ourselves. Currently underway integrations include things like smart fleet charging reimbursement through partners like Mina energy, energy monitoring integration with our partners at Envisij, reducing ICEing and bay hogging by integrating with sensors from Comms 365, and many others.

More roaming

We believe that roaming is critical to the adoption of EVs in the Uk so will always champion collaboration between networks. We hope to continue to add integrations with other networks on different platforms.

Transformation for Miralis

The SOSCI project has been transformational for Miralis Data. Consisting of only 3 staff at the start of the project, we are now 26 permanent staff with a network of regular subcontractors that we pull on as needed. We have transitioned from a small data consultancy to a single product software business, and this would not have been possible without the SOSCI project.

We are incredibly ambitious about the opportunity for continued growth that Fuuse provides us, and we plan to achieve it.

While we will continue to seek innovation funding, we are also currently seeking private investment off the back off the success of our role in SOSCI.