Site Name

B2B EV Charging System Operations & Maintenance Manual

Contents

1.0 Overview

1.1 Project details		**1.2 Client details**	
Project number:	######	Name:	######
Client reference:	-	Address:	######
Start date:	02/10/23		
End date:	03/11/23		
Surveyor:			
Project manager:	######		
Telephone:	######	Telephone:	######
1.3 Site details		**1.4 Installer details**	
Name:	######	Name:	Egg
Contact:	######	Contact:	######
Address:	######	Address:	Unit D Turnkey Park Royds Lane Leeds LS12 6AD
Telephone:	######	Telephone:	0113 8155366

Google Earth of Site

2.0 Handover Statement

Egg confirms that the installed EVSE have been designed and fitted in line with the 18th edition wiring regulations**.**

The installation has been performed based on information gathered at the time of the technical survey and has been informed by the requirements of the client and the existing electrical constraints present at the site.

If an electrical supply capacity upgrade is/was required in order to maximise the potential of the charging capabilities at the site, this has been discussed with the client in order for an informed decision to be made based on current and future charging requirements and other relevant electrical factors on-site.

System configuration:

- The client's desired charger configuration or use-case has been applied as agreed
- The client has acknowledged the implications/expectations of "load-managed" EVSE
- The client has completed the Stripe Pay account set-up in the CMS (if billing users to charge)

In case of system failure, shutdown and isolation:

- Isolate the electrical circuit at the MCB
- Contact support@crackingenergy.com

System start-up:

- Power up the electrical circuit at the MCB
- Observe EVSE unit screen and wait for boot-up message to appear

Maintenance:

The components of the system should be maintained regularly as per the guidance found in the manufacturers installation or maintenance manual. Egg offers a chargeable maintenance service that can be paid for upfront or in monthly instalments over an agreed period.

Support:

Egg will provide user/site technical support during office hours (9am – 5:30pm, Mon-Fri) for the duration of the installations warranty period if installed by TPW. The Support and Service team can be contacted via support@crackingenergy.com

If the client has elected to receive 24/7 support, this is provided by the third-party EVA Global. EVA Global will provide a bespoke contact number to be advertised at the site. Users who contact this number will be directed to a Technical Support advisor at EVA Global who will be able to assist in the case of faults or issues.

I sign this document in confirmation of my understanding of the system operation and support documentation:

Client Name: ######	Client Signature:	Date: ######
Supervisor Name: ######	Supervisor Signature:	Date: ######

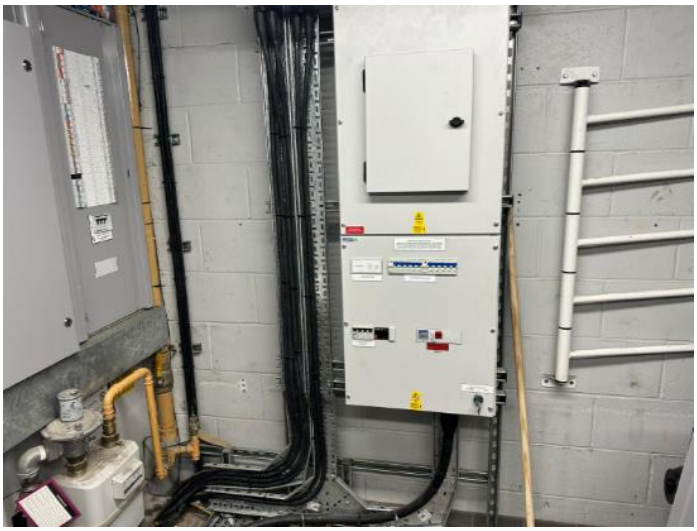
3.0 Installation

3.1 Standards
Egg confirms that the installed EVSE have been designed and fitted in line with the 18th edition wiring regulations and within CDM regulations**.**

3.2 Equipment Summary				
Manufacturer	Model	Serial Number	CPID	Back Office Provider
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######
######	######	######	######	######

3.3 EVSE Use-Case Applied at Site		
Free Vend:	**Yes/No**	No authorisation is required for a user to begin charging
QR Code(s):	**Yes/No**	The user must scan a QR code with their phone camera on the EVSE to begin charging.
Phoenix Works App:	**Yes/No**	The user must start and end the charge session via the **Phoenix Works** app.
PIN Code(s):	**Yes/No**	The user must start and end a charge session via a PIN code locally on the Etrel EVSE's touch screen.
RFID Fob(s):	**Yes/No**	The user must present an authorised RFID fob in order to start and end a charge session.
Contactless Payment Terminal:	**Yes/No**	The user must start and end the charge session by presenting an eligible payment card to the Payter terminal.

3.4 Site Specific Image Guide

Load Guard Location (ETREL PRODUCTS ONLY):	MCB Location:
	

Load Management and Variable Charge-Rates Explained:

The performance of load managed EV charging infrastructure is influenced by a number of variable factors that are present at the site of installation. In order for a charging "cluster" to charge electric vehicles safely and in an optimised fashion, the cluster will be actively reading the energy usage at the site via a "Load Guard" device. This device actively monitors the energy usage at the site and will regulate the amount of energy available to any electric vehicles that are plugged in. This can mean that the "speed" of charging can fluctuate during the charge session in order for safe charging to occur.

If a "Load Guard" device is **not** present at the install site, the charging cluster will likely be configured with a fixed safety parameter which is often derived from the size of the switchgear that "feeds" the charging cluster. This works in a similar fashion to a "Load Guard" device; however, it also means that if the energy usage at the installation site ever reaches or exceeds this fixed number, charging of any connected electric vehicles will likely be suspended until the demand for energy has reduced.

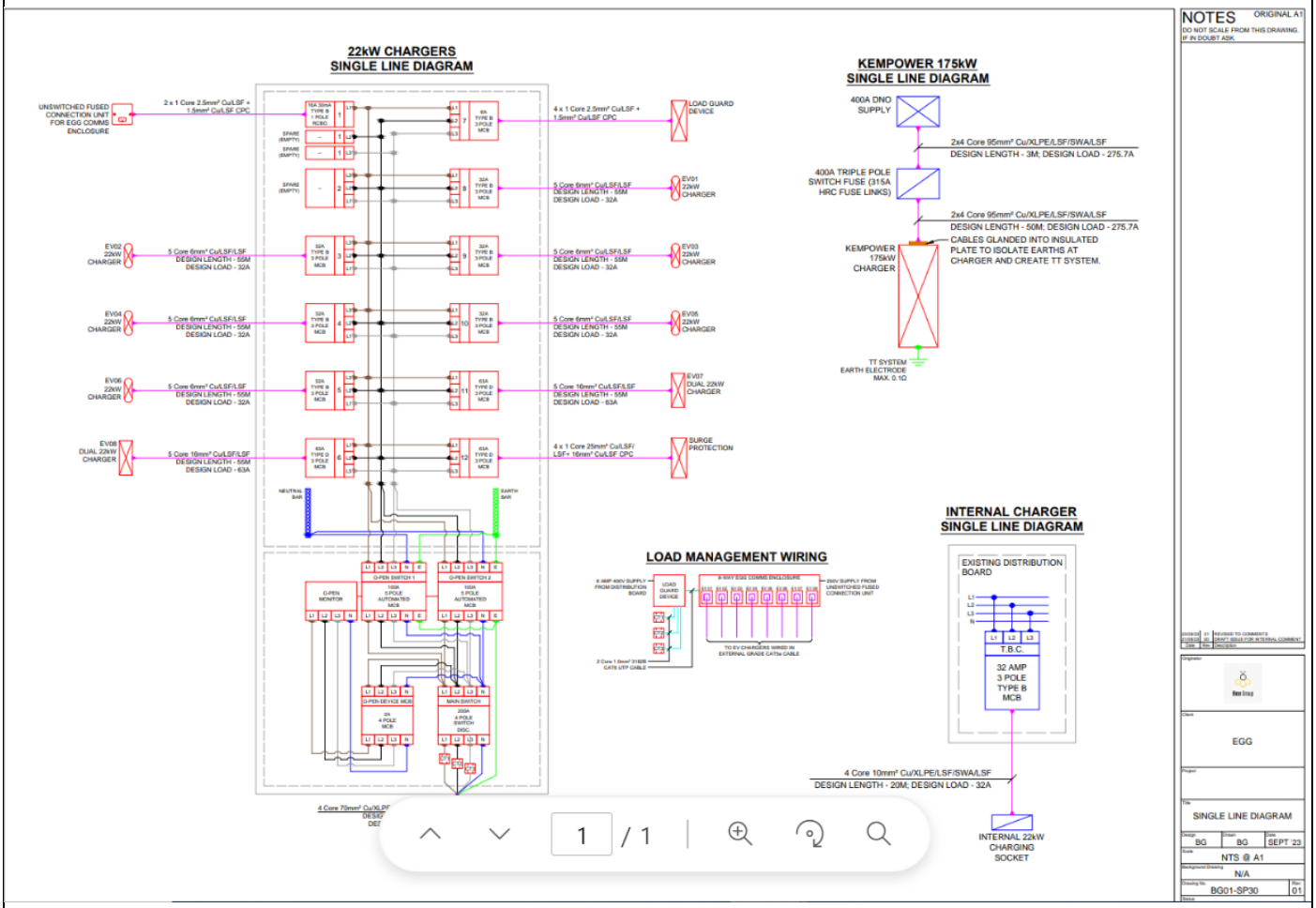
If a charging cluster is installed at a site with no form of load management and a limited supply, there is a legitimate risk of overloading the installation sites electrical supply and "blowing" the fuse. Most competent electrical installers that design, install and support electric vehicle charging infrastructure are well informed in this area and are therefore able to advise on an appropriate charging solution based on what the client needs and what already exists at the site.

While electric vehicle charging infrastructure can provide a wide range of charging "speeds", each electric vehicle (or manufacturer) has a slightly different capability for "accepting" energy from an electric vehicle charger.

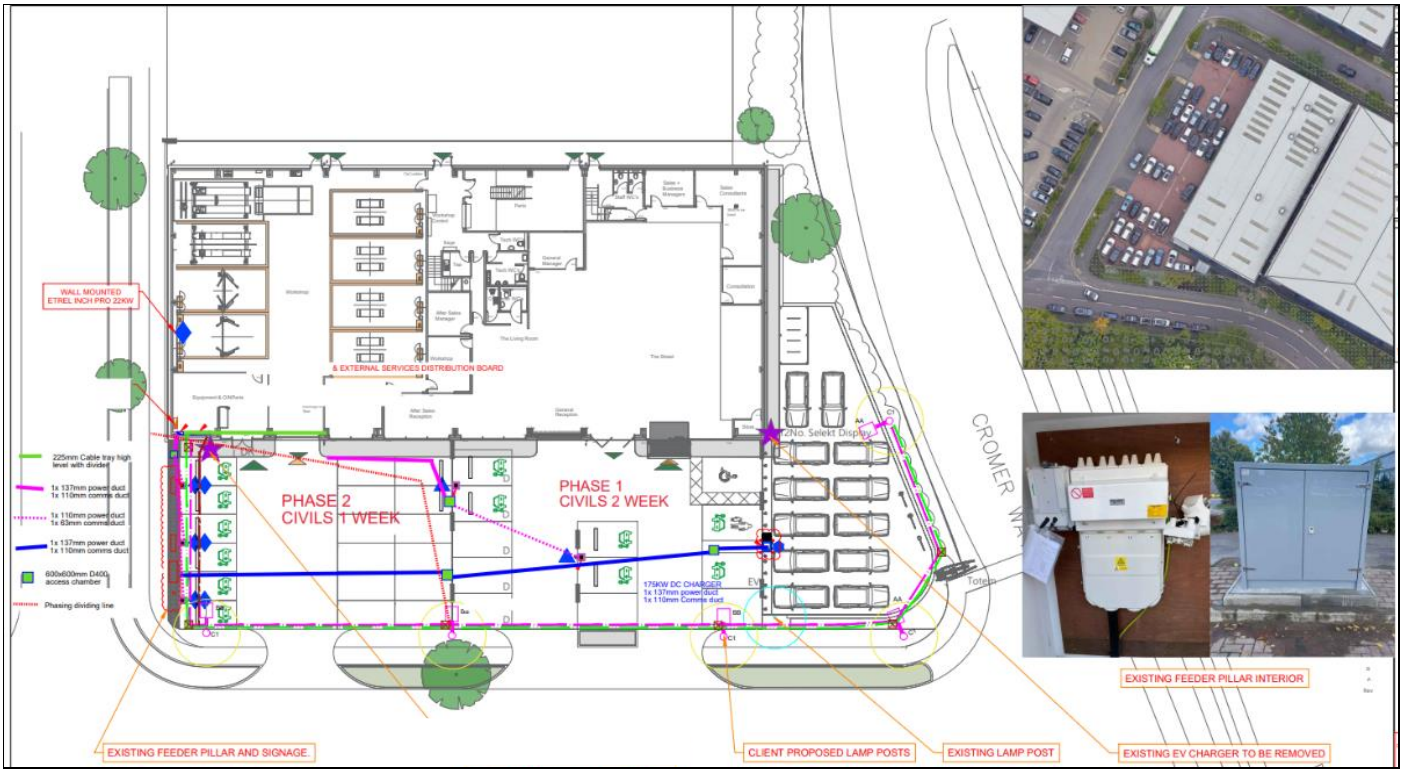
Most electric vehicles in the UK are capable at charging at 7kW, single phase on AC (fast) electric vehicle charge points, however not many are currently capable of charging at 22kW, 3 phase due to how the on-board charger accepts (converts) the energy from AC to DC. (Refer to your vehicle owner's handbook to see what your electric vehicle is capable of)

For instance, an electric vehicle charge point can be "capable" of providing 22kW, 3 phase power to an electric vehicle, but if the electric vehicle is not capable of accepting this charge-rate, it will be reduced by the EV's on-board charger to an accepted rate i.e. 11kW or 7kW.

3.5 Electrical Schematic



3.6 Site Layout



4.0 Instructions, Warranties and Certification

4.1 EV Charger	
4.1.1 Charger instructions	
Document Location:	Please find electronic copy enclosed in 7.0 Appendices
4.1.2 Charger warranty	
Document Location:	Please find electronic copy enclosed in 7.0 Appendices

4.2 Instructions, Warranties and Certification

4.2.1 Warranty Statement

1. **Definitions**
In this letter these capitalised terms shall have the following meaning:
Ancillary Goods: means all goods supplied by Egg in the course of performing the installation of the Products in accordance with the terms of the Contact (but excluding the Products).
Contract: means the Contract Agreement incorporating the NEC4 Engineering and Construction Short Contract made between (1) Landis & Gyr and (2) Egg dated 14/12/22.
Defects Liability Period: means the period of 3 years from the date of completion of the installation of the Products in accordance with the terms of the Contact.
Installation Defect: means that the installation of the Products was not performed in accordance with the Contract or that the Ancillary Goods do not conform to the requirements of the Contract.
Products: means the electric vehicle charging units installed by Egg pursuant to the Contract, as more specifically described in the Appendix.

2. **Products**

2.1 Egg warrants that each Product is free from defects for the Defects Liability Period.

2.2 Defects must be reported to Egg within 14 days of the Customer becoming aware of them. In the sole discretion of Egg, any defective Product covered by this warranty shall be either repaired or replaced (at Egg's cost) upon its return to the Company by the Customer. Any liability, either expressed or implied is limited to replacement or repair of the defective Product. Defective Products or components replaced by Egg become the property of Egg upon replacement.

2.3 Egg shall not be liable for any Product's failure to comply with the warranty set out in clause 2.1 above in any of the following events: 2.3.1 the Customer makes any further use of the Product after giving notice in accordance with clause 2.2; 2.3.2 the defect arises because the Customer failed to follow Egg's (or its subcontractor's, or other persons instructed by Egg) oral or written instructions for the storage, commissioning, installation, use or maintenance of the Product or (if there were none) good trade practice regarding the same; 2.3.3 the defect arises as a result of Egg following any drawing, design or specification supplied by the Customer; 2.3.4 the Customer, or any third party, alters or repairs the Product without the written consent of Egg; or 2.3.5 the defect arises as a result of fair wear and tear, wilful damage, negligence, abnormal storage or working conditions, lightning or other power and voltage surges, improper feeding, vandalism, external impacts, vehicle collision, fire, flood or any accidental or force majeure event.

2.4 This warranty does not extend to components requiring replacement due to wear and tear or that will require periodic replacement during the warranty period and is subject to the same limitation of liability as set out in the Contract.

3. Installation

3.1 Egg warrants that the installation services provided pursuant to the Contract will be free from defects in material and workmanship for the Defect Liability Period.

3.2 Defects must be reported to Egg within 14 days of the Customer becoming aware of them.

3.3 Egg shall (at its own expense) make good (by repair or replacement in its sole discretion) any Installation Defect notified to Egg by the Customer within the Defects Liability Period. Any liability, either expressed or implied is limited to replacement or repair of the Installation Defect.

4. General
This warranty statement is ancillary to the Contract and subject to the terms of Contract, to the extent applicable.

4.2.2 Warranty exclusions

If, in Egg's sole judgment, the system has been subject to misuse, neglect or accident, or has been damaged through abuse, alteration, failure to follow Egg's or the manufacturers' operation or maintenance instructions, or repaired by anyone other than Egg and its authorised dealers/installers, this warranty will not be applicable. This warranty does not cover damage due to acts of God, power failures, lightning, fire, flood, severe weather, hailstorms, insect and pest infestation and other events reasonably beyond Egg's control. Warranty coverage does not include any transportation costs for the return of components or for re-shipment of any repaired or replaced components.

5.0 Operation & Maintenance Information

5.1 Verifying system operation

- Follow the instructions detailed in the charger user manual

5.2 System shutdown and isolation

- Isolate the charger(s) at DB EV
- Contact Egg – 01138155366 for assistance if required

5.3 System start-up

- Ensure the EVSE circuit MCB is in the “ON” position
- Close the Isolator located DB EV
- Observe display as per charger user manual

5.4 Maintenance and cleaning

The components of the system should be cleaned as per the manufacturer’s instructions outlined in the component user manuals. If you have any questions regarding cleaning or maintenance, please contact Egg for more information.

5. 5 Considerations

Adjustment and alterations to the Charger, wiring, electrical hardware or mounting hardware should only be undertaken by suitably competent persons. Egg are not liable for any damage or injury which may result from unauthorised interaction with the system. If in doubt consult Egg before under-taking any alterations.

5.6 Troubleshooting and First Fixes

On occasion, the EVSE installed at the site may experience issues that can easily be resolved by someone at the site without need for input from Egg.

Please see below a short guide for what to try as a first fix when faced with an issue –

Charging cable is stuck in charger socket.
This can sometimes occur if a charging session is interrupted. Charging cables are also often locked into the charge point and the EV during charging so that it can't be removed or stolen. If the charging session has ended but the cable will not release, ensure the EV shows that the session has ended too. The chosen System User at your site should also be able to "unlock" the charging cable in the back office if required. If this is unsuccessful, simply turn off the MCB that feeds the charger, remove the cable and turn it back on.

RFID Fob is not recognised when presented or the charger states "not authorized to charge"
RFID fobs are often allocated on a per-site basis to a single user and are therefore activated on a one-by-one basis. The charging cluster at the site will likely have been restricted for use in a specific way as per the clients' requirements. If you believe your RFID fob should be authorised for use and is not working, please contact support@crackingenergy.com for assistance.

Charger appears to have "frozen" or is unresponsive when interacted with
Sometimes chargers will "freeze" during normal operation due to the amount of processing power required to deliver smart charging functionality. This can often be cured by a simple reset of the MCB in the feeder pillar. If this is fails to solve the issue, please contact support@crackingenergy.com

Charger states "Paused for Optimisation on-screen" and is no longer actively charging the connected EV
This is a normal state of operation for load managed EV chargers that are monitoring the energy usage at the site in real-time. If there has been a spike in energy demand at the premises, the chargers will moderate/reduce the amount of power available charging until the higher demand has passed.

Charger is not staying at a 7kW charge-rate and is fluctuating up and down. Why?
Another feature of load managed and load balanced charging is that the charger will be sharing data with the rest of the cluster and running calculations which factor in the following variables – Fastest Charge-Time / Expected Departure Time / Available Capacity at Site / Battery State of Connected EV. These factors in combination will influence the speed at which a connected EV is charged and can often mean the EVSE will moderate the charge-rate up and down in real-time to ensure all of these factors are accounted for.

Charger is a 22kW capable model, but my EV is only charging at 7kW. Why?
There are a number of factors to consider when it comes to EV charging, but this is one of the more common queries we encounter. Even if a charger is capable of delivering 22kW charge-rates, both the charging cable and the EV itself have to be capable of "accepting" a 22kW charge-rate. If you have a 22kW charger at your site, but your EV never exceeds 7kW or 11kW charging rates, then it likely is not capable of charging at the full 22kW 3-phase rate on an AC charger.

6.0 Health & Safety File

A brief description of the work carried out	Installation of 2 x etrel duo ev chargers to the outside of the building via a Matt-e unit. New Db installed with SPD and load balancing unit installed. 2x etrel inch pro ev chargers installed internally including a new DB with SPD.
Any hazards that have not been eliminated through the design or construction process and how they have been addressed (for example, surveys or other information concerning asbestos, contaminated land, water bearing strata and underground services)	N/A
Key structural principles (for example, bracing, sources of substantial stored energy, including pre- or post-tensioned members) and rated capacity (safe working loads) for floors and roofs	N/A
Hazardous materials used (for example, lead paint, pesticides and special coatings)	N/A
Information regarding removing or dismantling installed plant and equipment (for example, any special arrangements for lifting such equipment)	N/A
Health and safety information about equipment provided for cleaning or maintaining the structure	N/A
The nature, location and markings of significant services, including underground cables, gas supply equipment, fire-fighting services and so on	All areas of excavation are CAT scanned and included within RAMS
Information and as-built drawings of the building, its plant and equipment (for example, the means of safe access to and from service voids, fire doors and compartmentalisation and so on)	N/A

Name	######	Position	Project Manager	Signature		Date	XX/XX/XX

7.0 Appendices

O&M Manual Checklist	
Document Title	Received by client
	✓
Electrical Installation Certificate (EIC)	✓
Electric Vehicle Supply Equipment Commissioning Report	✓
Electric Vehicle Charge Point User Manual	✓
Health & Safety Documentation	✓
As Built Drawings and Schematics	✓
EVSE Warranty Certificate (where applicable)	✓

Glossary of Terms	
Term	**Explanation**
EV	Electric Vehicle
EVSE	Electric Vehicle Supply Equipment
Cluster	A group of interconnected smart EVSE that share information and an electrical supply
Back Office	System to which “smart” EVSE is connected to gather charging data and allow restriction of use
CMS	Charger Management System
Host	Operator of site where chargers are installed
Load Guard	An electrical component located near “origin” of a sites electrical supply to protect against overload
CT Clamp	Current Transformer clamp that monitors real-time energy usage at the site
Rogowski Coil	A larger version of the CT clamp that wraps around electrical cables over a certain diameter
Feeder Pillar	A metal cabinet that contains the switchgear that powers an electrical installation
Switchgear	Electrical components such as RCDs/RCBOs/MCBs
RCD	Residual Current Device
RCBO	Residual Current Circuit Breaker with Overcurrent Protection
MCB	Miniature Circuit Breaker
RFID	Radio-Frequency Identification
QR Code	A QR code is a type of barcode that can be read easily by a digital device.

Useful Company Information	
Name	**Who they are**
Egg	Installer of the EV Charge Points at the site
Plugsurfing	The party that created and develops the back-office platform that TPW uses
Phoenix Works EV	The EV charging network that Egg operates and manages across the UK
EVA Global	The company that operates Egg’s out-of-hours 24/7 support helpline for drivers
Stripe Pay	The integrated financial platform that manages financial reconciliation of money derived from billing users to charge between Plugsurfing platform and the site