

# Webinar Rules of Engagement

Welcome to LowCVP's Electrification of Bus Fleets Webinar

- 1. The webinar will be recorded and uploaded to view after with the meeting slides shared with participants.**
- 2. All participants will be muted throughout the webinar.**
- 3. Please keep your video and microphones turned off throughout.**
- 4. Please use the chat section to submit questions.** If you cannot use the chat please email your question to [Daniel.hayes@lowcvp.org.uk](mailto:Daniel.hayes@lowcvp.org.uk)

# Shepherds Bush Electrification Case Study

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**Mike Kerlake**  
Technical Manager  
BYD (UK) Ltd

**David Rollafson**  
Head of Commercial –  
Distributed Energy / EV  
SSE plc

**Charlie Barnes**  
Zero Emission Vehicles  
Project Manager  
RATP Dev



# The Challenge

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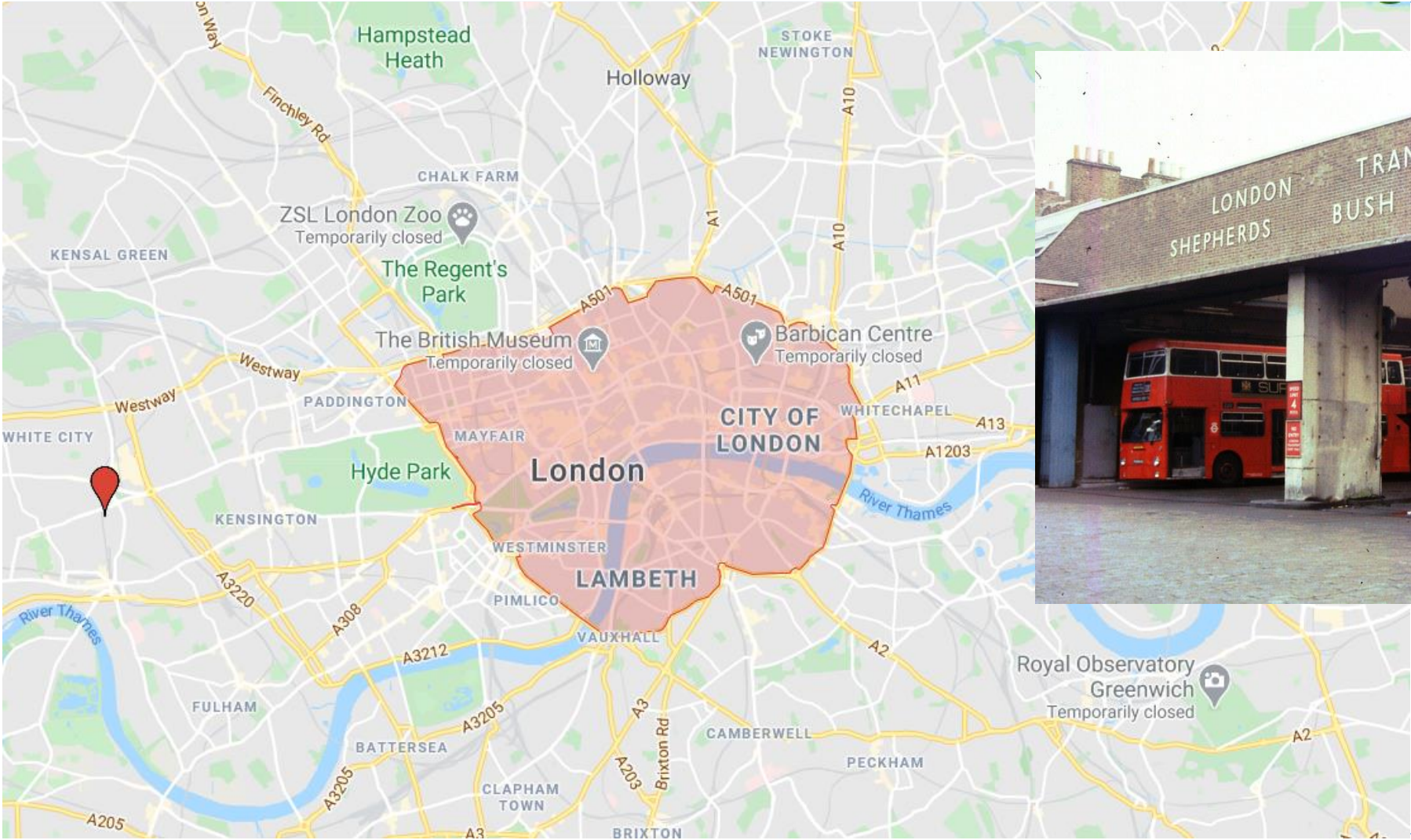
The TfL ULEZ (Ultra Low Emissions Zones) require zero emission vehicles to TfL specifications.

Central London routes are:

- ↑ High frequency
- ↑ High road traffic
- ↑ High passenger numbers



# The Location



# Two Bus Types






Launch Project: 36 Single Decks for route C1 and 70  
Fleet Expansion: 29 Double Decks for route 94

Specifications	Single Deck	Double Deck
Length	10.8m	10.9m
Traction Motor Power	180 kW	300 kW
Battery Capacity	307 kWh	382 kWh
Battery Type	BYD lithium iron phosphate	
Charging Connection	AC	
Charging Power	80 kW	



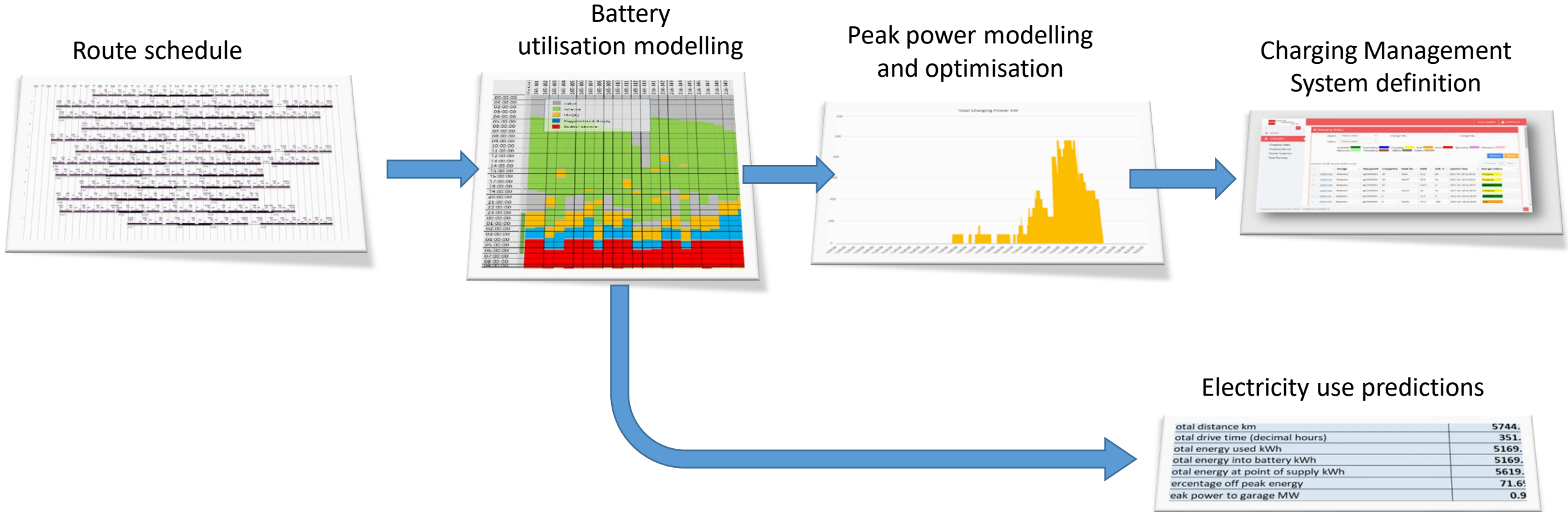
# AC Charger

Charger Type	Power	Cost	Installation
 AC	80 kW	Low	Compact
 DC	100-150 kW	Higher	Larger
 Pantograph	Up to 300 kW	Highest	Overhead

Specifications	BYD AC Charger
Input	400V 3-phase
Output	AC
Power Rating	80 kW
Vehicle Connection	2 x 63A Type 2 Connections
Control	Manual or Automatic
Installation	Indoor or outdoor

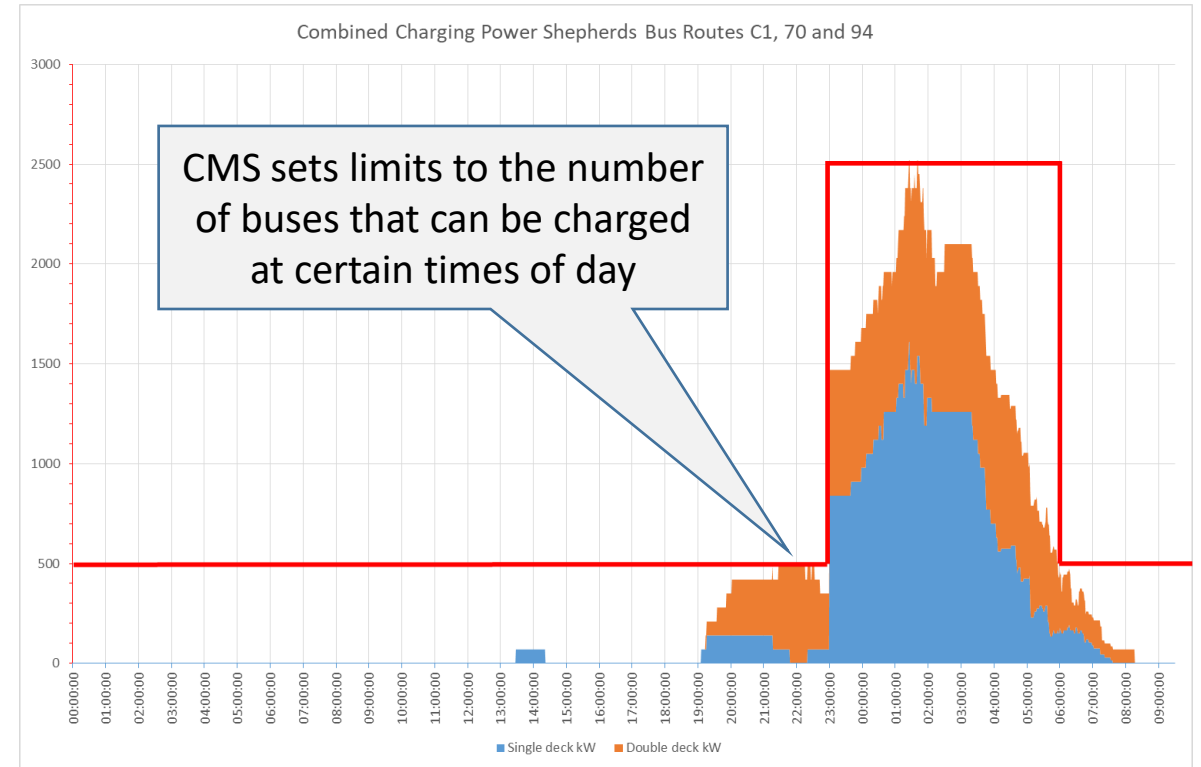
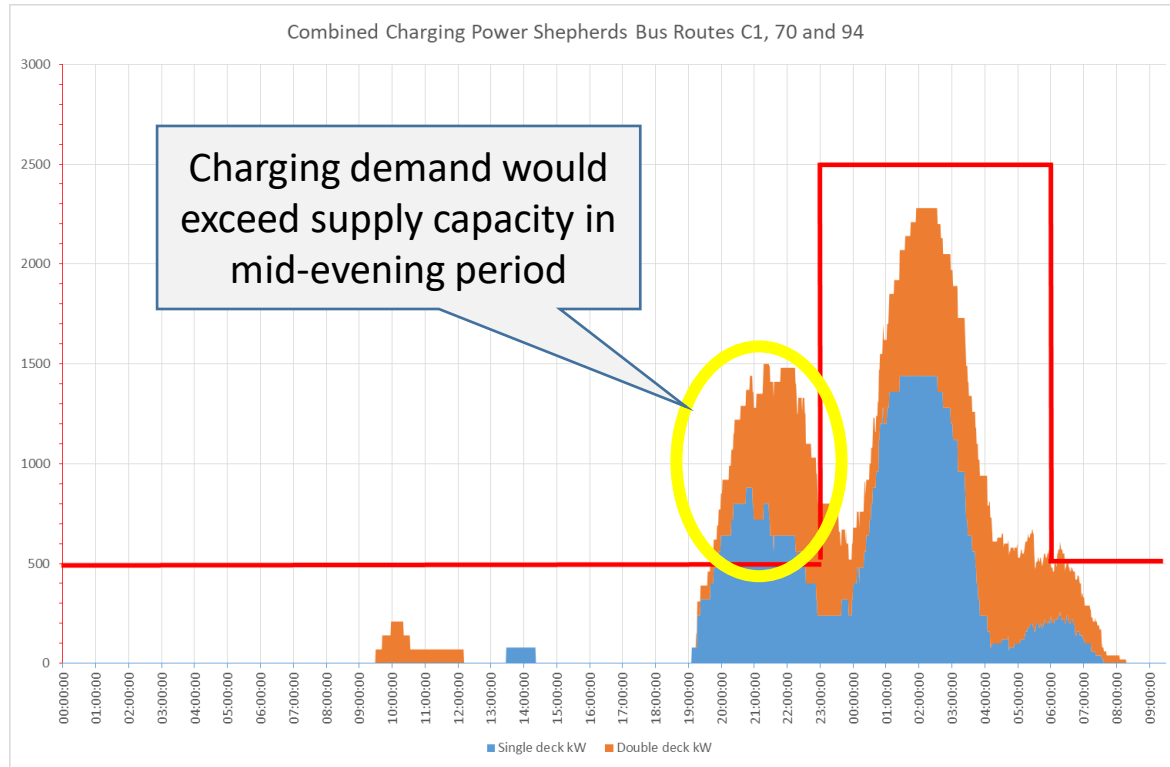


# Energy Consumption Modelling



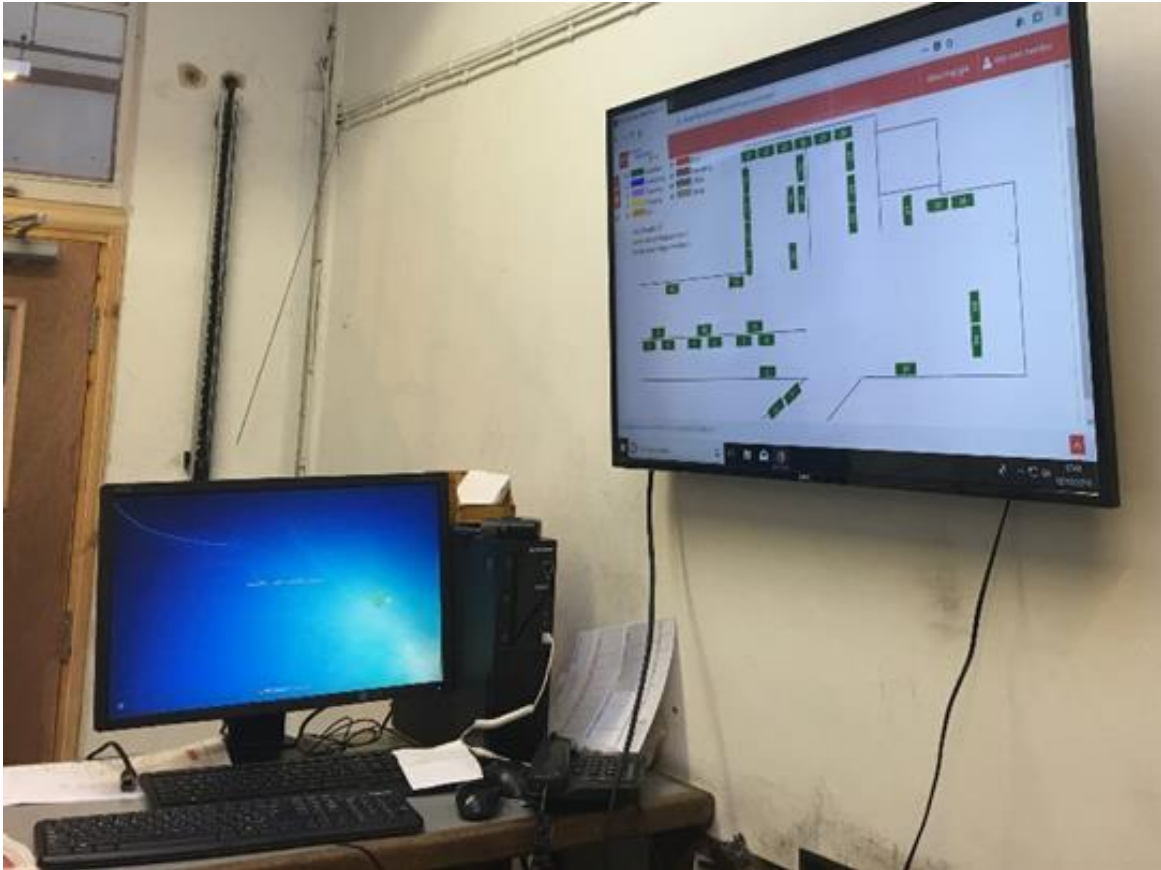
# Charging Management System

- Shepherds Bush Site has stringent daytime power limit
- CMS used to make sure daytime and night-time limits are not exceeded





# Charging Management System



About Foglight
byduk.office

37 Available 0 Error  
 0 Connecting 0 Rebooting  
 0 Queueing 0 Offline  
 0 Charging 0 Others  
 0 End

Total Chargers: 37  
 Current Allow Charging Leads: 3  
 Chager Involved: 0

### Charging Status

Depot: --Please Select-- Charger SN: \_\_\_\_\_ Charger No.: \_\_\_\_\_

Status: --Please Select--

Available: ■ Connecting: ■ Charging: ■ End: ■ Error: ■ Queueing: ■ Checkout: ■  
 Notcnted: ■ Rebooting: ■ Offline: ■ Others: ■

[Query](#) [Reset](#)

Current 1 to 37 records of 37 in total

<input type="checkbox"/>	Garage	ChargerSN	ChargerNo.	Fleet No.	KWh	SOC %	Update Time	Charger Status
<input type="checkbox"/>	5550889 London United Shepherds Bush Garage	8130900014	1		0	0	2018-10-24 23:32:56	Available
<input type="checkbox"/>	5550880 London Unit epherds Bust age							
<input type="checkbox"/>	5550884 London Unit epherds Bust							

### Charging Record List

Depot: --Please Select-- Charger SN: \_\_\_\_\_ Charger No.: \_\_\_\_\_

Card No.: \_\_\_\_\_ Fleet No.: \_\_\_\_\_ Start Date: 2018-10-24

End Date: 2018-10-24

[Query](#) [Reset](#) [Export](#)

Current 1 to 6 records of 6 in total

<input type="checkbox"/>	Garage	Charger SN	No.	Card	Bal.	Start	End	Duration	KWh	Cost	General
<input type="checkbox"/>	459 London Unit Shepherds Bush Garage	3132700007	3		0	2018-10-24 20:55:12	2018-10-24 21:35:30	40	38	0	SOC End: 100% Fleet No.: BE37007 Mileage: 4017.9 VIN: LC04524PXM1992335
<input type="checkbox"/>	458 London Unit Shepherds Bush Garage	3132700008	5		0	2018-10-24 19:28:53	2018-10-24 20:49:41	81	91.4	0	SOC End: 85% Fleet No.: BE37007 Mileage: 4017.8 VIN: LC04524PXM1992335
<input type="checkbox"/>	London Uni										SOC End: 100%



# Depot Electrification

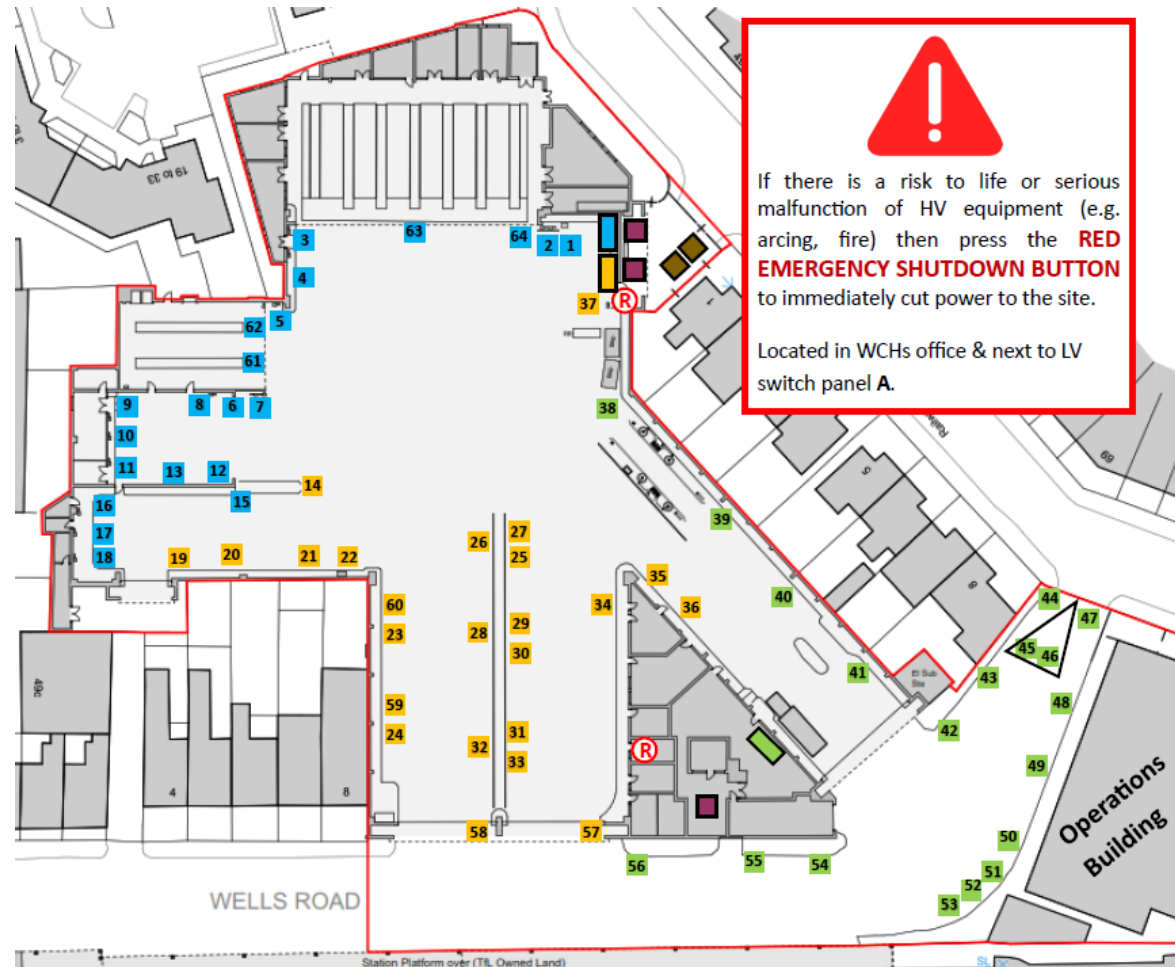


- Charging Plan -> Peak Consumption
- DNO / IDNO Point of Connection
- Resilience
- HV Transformer
- Metering
- Private network option



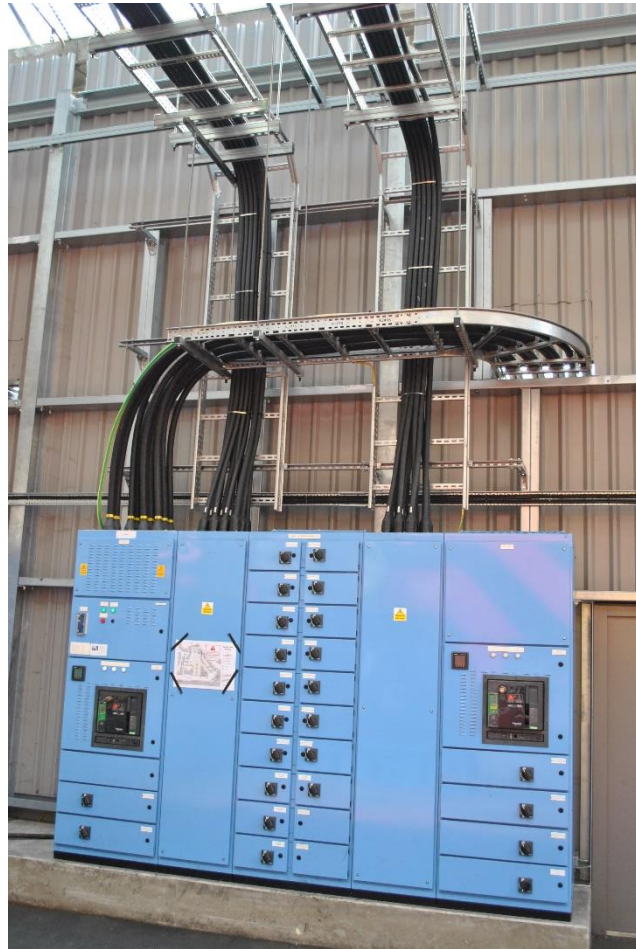
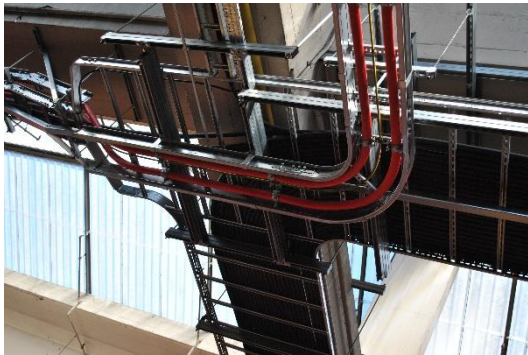
# Parking Plan

- Mixed Fleet (Electric + Diesel)
- Bus arrival/departure times
- Turn radius
- Future electrification plan
- Parking plan
- Charger location



# Low Voltage / Chargers

- LV panel installation
- LV network design
- Overhead LV routing



- To depot perimeter / charging islands
- Barrier protection



# The Experience

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Minimal impact to operational service through:

- Regular communication
- Teamwork
- Flexibility
- Understanding

*It is **key** to ask the right people the right questions at the right time!*



# The Result

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- 63% of drivers prefer driving EVs over hybrid and diesel
- Significant reduction in Mechanical Lost Mileage
- Reduction in 'fuel' costs
- Less noise pollution → TfL AVAS trial
- Lost parking spaces due to charger installation



# The Lessons Learned

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- Capitalise on available expertise
- Consider the wider and long term effects of design & installs
- Understand the effect on every team, role & process
- Dissemination of key new information



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Thank you.

Questions?

**Mike Kerlake**

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michael.kerlake@byd.com

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David.Rollafson@sse.com

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charlie.barnes@ratpdev.com





3 presentations from LowCVP members supporting electrification of bus fleets

- **Mellor:** Approaches and Solutions to Electric Mobility - [Steve.Reeves@woodall-nicholson.co.uk](mailto:Steve.Reeves@woodall-nicholson.co.uk)
- **Horiba-Mira:** Retrofit of diesel buses to electric - [greg.harris@horiba-mira.com](mailto:greg.harris@horiba-mira.com)
- **Irizar e-Mobility:** Turnkey solutions for fleet electrification - [shaun@irizar.co.uk](mailto:shaun@irizar.co.uk)
- Questions and answers

# Thanks for attending

- Next Webinar on Electrification of Bus Fleets on ***Tuesday 2<sup>nd</sup> June at 11:00 – 12:00 BST***

[Register Here: Electric Park and Ride services in York – First Bus & Optare](#)

[Webinar: Decarbonising Heavy Duty Vehicles with Renewable Fuels – Thursday May 28<sup>th</sup> at 11:00 - 12:00 BST](#)

[LowCVP Annual Conference - SAVE THE DATE – July 15<sup>th</sup> \(free for members\)](#)

Interested in joining [LowCVP's working groups](#) and supporting the shift to net-zero?

Contact [Daniel.hayes@lowcvc.org.uk](mailto:Daniel.hayes@lowcvc.org.uk) for more details.