

# Metroline Travel Electric bus project

First pure electric  
double deck buses on  
streets of London



# Metroline

A member of  
**COMFORTDELGRO**

# Introduction

- Metroline Travel is owned by Comfort DelGro Corporation a Singapore based business
- Operates in 8 countries - 36,000 vehicles 45,000 employees
- Singapore (SBS Transit, CDGE & MRT)
- UK (Metroline, Westbus, NAT, Scottish Citylink, Cityfleet (taxi and limousines)
- Irish Citylink
- CDC Australia ( largest private operator)Swan taxis
- Vietnam, Cambodia, Malaysia and China

**Metroline**

A member of  
**COMFORTDELGRO**

# Metroline

- Metroline Current Fleet – circa 1700 vehicles
- 14 sites in London, refurbishment centre in Bucks
- Split 65% D/D to 35% S/D
- 42% Volvo, 45% ADL, 13% NRM, Scania, Optare, BYD
- 600 hybrid double decks
- Partnering with TfL on the Jive Hydrogen fuel cell project, roll out expected in 2020

**Metroline**

A member of  
**COMFORTDELGRO**

# Electric Vehicles



- 23 BYD/ADL S/D at Holloway
- 37 BYD / ADL Double deck buses delivered to Holloway garage
- 16 of 32 Optare Metrocity DDs delivered to Potters bar garage
- Longest duty is expected to be 140 miles on routes won so far

**Metrolino**

A member of  
**COMFORTDELGRO**

# Infrastructure upgrades

- Both depots are old and needed considerable upgrades to infrastructure
- Deliberate strategy of choosing two different technologies (1 AC and 1 DC)
- Potters Bar project required 1 power point per vehicle as the charging system is mounted on the bus.
- Holloway has 60 chargers but will eventually have more vehicles.
- Charging predominantly planned for between 22.00 and 06.00hrs, with some variations due to night routes and other requirements.
- Various charging strategies required because of route variations, terrain and contract requirements.
- Mix of fast and slow charge in place, battery displacement and cell levelling charge currently being planned out.
- 1 x Optare charger located at Holloway in case a bus needs an emergency charge

**Metroline**

A member of  
**COMFORTDELGRO**

# Infrastructure planning

- Expected capacity requirement (full or partial electrification for the site)
- Capacity availability from the grid ( sufficient? or grid upgrade required)
- Location of chargers, substations, power cabling, parking/ charging bays, changes to depot layout, pedestrian walkways and safe areas for staff, contractors, public access.
- Storage of charging leads, protection of chargers, and safe access for maintenance.
- Charging facilities required in workshops? Removal and fitment of batteries.
- Building alterations
- Planning permission lead times

## The Project.....Or the pain of reality

- Timescales for a quote, and acceptance of that quote do not fit in with London contract expectations
- Payment to the grid operator up front, and it is not a fixed cost
- Quotations for contestable works need to be thoroughly specified out or again the price rises with every hurdle that appears.
- Investigation on planning permission should be sought prior to any works being authorised.
- Realistic overview on how the works will affect your normal operations, very close work required with your chosen contractor.
- Project manager needs to be able to work with the contractor and the onsite activities.



# What have we learnt from our first two projects

- The various authorities, i.e. council, TfL, Grid supplier, all have different priorities
- There is always capacity near shopping centres and large industrial areas
- Don't think you will be treated any differently when applying for an increase in power at a bus depot. If someone else comes in with a request and your quotation has expired, the grid supplier will sell it to someone else.
- Do not over specify your power requirement, as the supplier will take your excess capacity away.
- Do consider how to future proof the infrastructure even if it is a partial depot upgrade.
- Consider what you can do with the power you have available during the day if you charge at night, i.e., sell it to someone else.
- What happens if the electric supply fails.....

**Metroline**

A member of  
**COMFORTDELGRO**



# The costs

- Holloway originally planned as requiring an additional 2.72 MVA for first batch of singles, subsequently applied to increase to 5.5MVA with a timed connection and an upgrade of supply. The timed connection allows us to draw additional power between 22.30 and 07.00hrs. Initial cost was budgeted at around £1.7 million. With delays, upgrades, increased costs for both contestable and non contestable works, there was a 20% increase in cost on the original budget.
- Potters Bar budget was around £1.2 million and it eventually cost around £900k
- Both sites required extra civils due to contaminated soil, Holloway is still awaiting a third cable to be run to the depot which is delayed by wrangling between the power supplier and TfL property as it needs to run under a TfL owned bridge.
- Interesting projects with lots of twists and turns, the difficulty is trying to work in a structure of purchasing, authorisation and implementation with a supplier who is used to 3/10 year lead times on building projects (grid suppliers). There is nothing agile or fast moving about the electricity grids.

**Metroline**

A member of  
**COMFORTDELGRO**